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ELEMENTS

OF THE

PHILOSOPHY OF THE HUMAN MIND.

ELEMENTS

OF THE

PHILOSOPHY OF THE HUMAN MIND.

BY DUGALD STEWART.

IN TWO VOLUMES.

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In various parts of the following Work, references are made to subsequent speculations, which are not contained in it. These speculations it is my intention to resume at some future period: but when I consider the extent of my subject, and the many accidents which may divert me from the prosecution of it, I cannot venture so far as to announce, in the title-page of this volume, any promise of a future publication.

Some additional chapters are still wanting, to complete the Analysis of the Intellectual Powers. After finishing this, the course of my inquiries would lead me to treat, in the second place, of Man considered as an Active and Moral being; and, thirdly, of Man considered as the member of a Political Society.

COLLEGE OF EDINBURGH,
March 13, 1792.

TO

THE REV. THOMAS REID, D. D.

PROFESSOR OF MORAL PHILOSOPHY IN THE UNIVERSITY OF GLASGOW,

THIS WORK

IS INSCRIBED

IN

TESTIMONY OF THE RESPECT AND AFFECTION

OF

THE AUTHOR.

CONTENTS.

INTRODUCTION.

PART I.

Of the Nature and Object of the Philosophy of the Human Mind - - - - - Page 1

PART II.

Sect. I.—Of the Utility of the Philosophy of the Human Mind - - - - - - 13
II.—Continuation of the same Subject - - - 33

CHAPTER I.

Of the Powers of External Perception.

Sect. I.—Of the Theories which have been formed by Philosophers, to explain the Manner in which the Mind perceives External Objects - - 47
II.—Of certain natural Prejudices, which seem to have given rise to the common Theories of Perception - - - - - - 52
III.—Of Dr. Reid's Speculations on the Subject of Perception - - - - - - 64
IV.—Of the Origin of our Knowledge - - - 69

CHAPTER II.

Of Attention. 77

CHAPTER III.

Of Conception. 99

CHAPTER IV.

Of Abstraction.

Sect. I.—General Observations on this Faculty of the Mind 113
II.—Of the Objects of our Thoughts, when we employ general Terms - - - - 119
III.—Remarks on the Opinions of some modern Philosophers on the Subject of the foregoing Section 135
IV.—Continuation of the same Subject.—Inferences with respect to the Use of Language as an Instrument of Thought, and the Errors in Reasoning to which it occasionally gives rise - - - 145
V.—Of the Purposes to which the Powers of Abstraction and Generalization are subservient - - 150
VI.—Of the Errors to which we are liable in Speculation, and in the Conduct of Affairs, in consequence of a rash Application of general Principles. - 157
VII.—Continuation of the same Subject.—Differences in the Intellectual Characters of Individuals, arising from their different Habits of Abstraction and Generalization - - - - - 164
VIII.—Continuation of the same Subject.—Use and Abuse of general Principles in Politics - - 171

CHAPTER V.

Of the Association of Ideas. 203

PART I.

Of the Influence of Association in regulating the Succession of our Thoughts.

Sect. I.—General Observations on this part of our Constitution, and on the Language of Philosophers with respect to it - - - - - - 203
II.—Of the Principles of Association among our Ideas 211
III.—Of the Power which the Mind has over the Train of its Thoughts - - - - - 216
IV.—Illustrations of the Doctrine stated in the preceding Section - - - - - 220
1. Of Wit - - - - - 220

2. Of Rhyme 224
3. Of Poetical Fancy 228
4. Of Invention in the Arts and Sciences 232
V.—Application of the Principles stated in the foregoing Sections of this Chapter, to explain the Phenomena of Dreaming 239

PART II.

Of the Influence of Association on the Intellectual and on the Active Powers.

Sect. I.—Of the Influence of casual Associations on our speculative Conclusions 256
II.—Of the Influence of the Association of Ideas on our Judgments in Matters of Taste 271
III.—Of the Influence of Association on our active Principles, and on our moral Judgments 284
IV.—General Remarks on the Subjects treated in the foregoing Sections of this Chapter 292

CHAPTER VI.

Of Memory.

Sect. I.—General Observations on Memory 297
II.—Of the Varieties of Memory in different Individuals 307
III.—Of the Improvement of Memory.—Analysis of the Principles on which the Culture of Memory depends 316
IV.—Continuation of the same Subject.—Aid which the Memory derives from Philosophical Arrangement 321
V.—Continuation of the same Subject.—Effects produced on the Memory by committing to Writing our acquired Knowledge 329
VI.—Continuation of the same Subject.—Of Artificial Memory 335
VII.—Continuation of the same Subject.—Importance of making a proper Selection among the Objects of our Knowledge, in order to derive Advantage from the Acquisitions of Memory 340
VIII.—Of the Connexion between Memory and Philosophical Genius 347

CHAPTER VII.

Of Imagination.

Sect. I.—Analysis of Imagination 355

II.—Of Imagination considered in its Relation to some of the Fine Arts - - - - - 361
III.—Continuation of the same Subject.—Relation of Imagination and of Taste to Genius - - 374
IV.—Of the Influence of Imagination on Human Character and Happiness - - - - - 375
V.—Continuation of the same Subject.—Inconveniences resulting from an ill-regulated Imagination 381
VI.—Continuation of the same Subject.—Important Uses to which the Power of Imagination is subservient - - - - - 391

Notes and Illustrations - - - - 395

ELEMENTS

OF THE

PHILOSOPHY OF THE HUMAN MIND.

INTRODUCTION.

PART FIRST.

Of the Nature and Object of the Philosophy of the Human Mind.

THE prejudice which is commonly entertained against metaphysical speculations, seems to arise chiefly from two causes: First, from an apprehension, that the subjects about which they are employed, are placed beyond the reach of the human faculties; and, secondly, from a belief, that these subjects have no relation to the business of life.

The frivolous and absurd discussions which abound in the writings of most metaphysical authors, afford but too many arguments in justification of these opinions; and if such discussions were to be admitted as a fair specimen of what the human mind is able to accomplish in this department of science, the contempt, into which it has fallen of late, might with justice be regarded as no inconsiderable evidence of the progress which true philosophy has made in the present age. Among the various subjects of inquiry, however, which, in consequence of the vague use of language, are comprehended under the general title of Metaphysics, there are some, which are essentially distinguished from the rest, both by the degree of evidence which accompanies their principles, and by the relation which they bear to the useful sciences and arts; and it has unfortunately happened, that these have shared in that general discredit, into which the other branches of metaphysics have justly fallen. To this circumstance is probably to be ascribed the little progress which has hitherto been made in the PHILOSOPHY OF THE HUMAN MIND; a science, so interesting in its nature, and so important in its applications, that it could scarcely have failed, in these inquisitive and enlightened times, to have excited a very general attention, if it had not accidentally been classed, in the public opinion, with the vain and unprofitable disquisitions of the schoolmen.

In order to obviate these misapprehensions with respect to the subject of the following work, I have thought it proper in this preliminary chapter, first, to explain the nature of the truths which I propose to investigate; and, secondly, to point out some of the more important applications of which they are susceptible. In stating these preliminary observations, I may perhaps appear to some to be minute and tedious; but this fault, I am confident, will be readily pardoned by those, who have studied with care the principles of that science, of which I am to treat; and who are anxious to remove the prejudices which have, in a great measure, excluded it from the modern systems of education. In the progress of my work, I flatter myself that I shall not often have occasion to solicit the indulgence of my readers for an unnecessary diffuseness.

The notions we annex to the words, *matter*, and *mind*, as is well remarked by Dr. Reid,* are merely relative. If I am asked, what I mean by Matter, I can only explain myself by saying, it is that which is extended, figured, colored, moveable, hard or soft, rough or smooth, hot or cold;—that is, I can define it in no other way, than by enumerating its sensible qualities. It is not matter, or body, which I perceive by my senses; but only extension, figure, color, and certain other qualities, which the constitution of my nature leads me to refer to something, which is extended, figured, and colored. The case is precisely similar with respect to mind. We are not immediately conscious of its existence, but we are *conscious* of sensation, thought, and volition; operations, which imply the existence of *something* which feels, thinks, and wills. Every man too is impressed with an irresistible conviction, that all these sensations, thoughts, and volitions, belong to one and the same being; to that being which he calls *himself;* a being, which he is led, by the constitution of his nature, to consider as something distinct from his body, and as not liable to be impaired by the loss or mutilation of any of his organs.

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* Essays on the Active Powers of Man, p. 8, 9.

From these considerations, it appears, that we have the same evidence for *the existence of mind,* that we have *for the existence* of body; nay, if there be any difference between the two cases, that we have stronger evidence for it; inasmuch as the one is suggested to us by the subjects of our own consciousness, and the other merely by the objects of our perceptions: and in this light, undoubtedly, the fact would appear to every person, were it not, that, from our earliest years, the attention is engrossed with the qualities and laws of matter, an acquaintance with which is absolutely necessary for the preservation of our animal existence. Hence it is, that these phenomena occupy our thoughts more than those of mind; that we are perpetually tempted to explain the latter by the analogy of the former, and even to endeavour to refer them to the same general laws; and that we acquire habits of inattention to the subjects of our consciousness, too strong to be afterwards surmounted, without the most persevering industry.

If the foregoing observations be well founded, they establish the distinction between mind and matter, without any long process of metaphysical reasoning:* for if our notions of both are merely relative; if we know the one, only by such sensible qualities as extension, figure, and solidity; and the other, by such operations as sensation, thought, and volition; we are certainly entitled to say, that matter and mind, considered as objects of human study, are essentially different; the science of the former resting ultimately on the phenomena exhibited to our senses; that of the latter, on the phenomena of which we are conscious. Instead, therefore, of objecting to the scheme of materialism, that its conclusions are false, it would be more accurate to say, that its aim is unphilosophical. It proceeds on a misapprehension of the proper object of science; the difficulty which it professes to remove being manifestly placed beyond the reach of our faculties. Surely, when we attempt to explain the nature of that principle which feels and thinks and wills, by saying, that it is a material substance, or that it is the result of material organization, we impose on ourselves by words —forgetting that matter, as well as mind, is known to us by its qualities and attributes alone, and that we are totally ignorant of the essence of either.*

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* See note [A] at the end of the volume.

As all our knowledge of the material world is derived from the information of our senses, natural philosophers have, in modern times, wisely abandoned to metaphysicians all speculations concerning the nature of that substance of which it is composed; concerning the possibility or impossibility of its being created; concerning the efficient causes of the changes which take place in it; and even concerning the reality of its existence, independent of that of percipient beings: and have confined themselves to the humbler province of observing the phenomena it exhibits, and of ascertaining their general laws. By pursuing this plan steadily, they have, in the course of the two last centuries, formed a body of science, which not only does honor to the human understanding, but has had a most important influence on the practical arts of life. This experimental philosophy no one now is in danger of confounding with the metaphysical speculations already mentioned. Of the importance of these, as a separate branch of study, it is possible that some may think more favorably than others; but they are obviously different in their nature from the investigations of physics; and it is of the utmost consequence to the evidence of this last science, that its principles should not be blended with those of the former.

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* Some metaphysicians, who appear to admit the truth of the foregoing reasoning, have farther urged, that for any thing we can prove to the contrary, it is possible, that the unknown substance which has the qualities of extension, figure, and color, may be the same with the unknown substance which has the attributes of feeling, thinking, and willing. But besides that this is only an hypothesis, which amounts to nothing more than a mere possibility, even if it were true, it would no more be proper to say of mind, that it is material, than to say of body, that it is spiritual.

A similar distinction takes place among the questions which may be stated relative to the human mind.—Whether it be extended or unextended; whether or not it has any relation to place; and (if it has) whether it resides in the brain, or be spread over the body, by diffusion; are questions perfectly analogous to those which metaphysicians have started on the subject of matter. It is unnecessary to inquire, at present, whether or not they admit of answer. It is sufficient for my purpose to remark, that they are as widely and obviously different from the view, which I propose to take of the human mind in the following work, as the reveries of Berkeley concerning the non-existence of the material world, are from the conclusions of Newton and his followers.—It is farther evident, that the metaphysical opinions, which we may happen to have formed concerning the nature either of body or of mind, and the efficient causes by which their phenomena are produced, have no necessary connexion with our inquiries concerning the laws, according to which these phenomena take place.—Whether, for example, the cause of gravitation be material or immaterial, is a point about which two Newtonians may differ, while they agree perfectly in their physical opinions. It is sufficient, if both admit the general fact, that bodies tend to approach each other, with a force varying with their mutual distance, according to a certain law. In like manner, in the study of the human mind, the conclusions to which we are led, by a careful examination of the phenomena it exhibits, have no necessary connexion with our opinions concerning its nature and essence.—That when two subjects of thought, for instance, have been repeatedly presented to the mind in conjunction, the one has a tendency to suggest the other, is a fact of which I can no more doubt, than of any thing for which I have the evidence of my senses; and it is plainly a fact totally unconnected with any hypothesis concerning the nature of the soul, and which will be as readily admitted by the materialist as by the Berkeleian.

Notwithstanding, however, the reality and importance of this distinction, it has not hitherto been sufficiently attended to, by the philosophers who have treated of the human mind. Dr. Reid is perhaps the only one who has perceived it clearly, or at least who has kept it steadily in view in all his inquiries. In the writings indeed of several other modern metaphysicians, we meet with a variety of important and well ascertained facts; but, in general, these facts are blended with speculations upon subjects which are placed beyond the reach of the human faculties. It is this mixture of fact and of hypothesis, which has brought the philosophy of mind into some degree of discredit; nor will ever its real value be generally acknowledged, till the distinction I have endeavoured to illustrate be understood, and attended to, by those who speculate on the subject. By confining their attention to the sensible qualities of body, and to the sensible phenomena it exhibits, we know what discoveries natural philosophers have made: and if the labors of metaphysicians shall ever be rewarded with similar success, it can only be by attentive and patient reflection, on the subjects of their own consciousness.

I cannot help taking this opportunity of remarking, on the other hand, that if physical inquirers should think of again employing themselves in speculations about the nature of matter, instead of attempting to ascertain its sensible properties and laws (and of late there seems to be such a tendency among some of the followers of Boscovich) they will soon involve themselves in an inextricable labyrinth, and the first principles of physics will be rendered as mysterious and chimerical, as the pneumatology of the school-men.

The little progress which has hitherto been made in the philosophy of mind, will not appear surprising to those who have attended to the history of natural knowledge. It is only since the time of Lord Bacon, that the study of it has been prosecuted with any degree of success, or that the proper method of conducting it has been generally understood. There is even some reason for doubting, from the crude speculations on medical and chemical subjects which are daily offered to the public, whether it be yet understood so completely as is commonly imagined; and whether a fuller illustration of the rules of philosophizing, than Bacon or his followers have given, might not be useful, even to physical inquirers.

When we reflect in this manner, on the shortness of the period during which natural philosophy has been successfully cultivated; and, at the same time, consider how open to our examination the laws of matter are, in comparison of those which regulate the phenomena of thought, we shall neither be disposed to wonder, that the philosophy of mind should still remain in its infancy, nor be discouraged in our hopes concerning its future progress. The excellent models of this species of investigation, which the writings of Dr. Reid exhibit, give us ground to expect that the time is not far distant, when it shall assume that rank which it is entitled to hold among the sciences.

It would probably contribute much to accelerate the progress of the philosophy of mind, if a distinct explanation were given of its nature and object; and if some general rules were laid down, with respect to the proper method of conducting the study of it. To this subject, however, which is of sufficient extent to furnish matter for a separate work, I cannot attempt to do justice at present; and shall therefore confine myself to the illustration of a few fundamental principles, which it will be of essential importance for us to keep in view in the following inquiries.

Upon a slight attention to the operations of our own minds, they appear to be so complicated, and so infinitely diversified, that it seems to be impossible to reduce them to any general laws. In consequence, however, of a more accurate examination, the prospect clears up; and the phenomena, which appeared, at first, to be too various for our comprehension, are found to be the result of a comparatively small number of simple and uncompounded faculties, or of simple and uncompounded principles of action. These faculties and principles are the general laws of our constitution, and hold the same place in the philosophy of mind, that the general laws we investigate in physics, hold in that branch of science. In both cases the laws which nature has established, are to be investigated only by an examination of facts; and in both cases, a knowledge of these laws leads to an explanation of an infinite number of phenomena.

In the investigation of physical laws, it is well known, that our inquiries must always terminate in some general fact, of which no account can be given, but that such is the constitution of nature. After we have established, for example, from the astronomical phenomena, the universality of the law of gravitation, it may still be asked, whether this law implies the constant agency of mind; and (upon the supposition that it does) whether it be probable that the Deity always operates immediately, or by means of subordinate instruments. But these questions, however curious, do not fall under the province of the natural philosopher. It is sufficient for his purpose, if the universality of the fact be admitted.

The case is exactly the same in the philosophy of mind. When we have once ascertained a general fact; such as, the various laws which regulate the association of ideas, or the dependence of memory on that effort of the mind which we call *attention;* it is all we ought to aim at, in this branch of science. If we proceed no farther than facts for which we have the evidence of our own consciousness, our conclusions will be no less certain, than those in physics: but if our curiosity leads us to attempt an explanation of the association of ideas, by certain supposed vibrations, or other changes, in the state of the brain; or to explain memory, by means of supposed impressions and traces in the sensorium; we evidently blend a collection of important and well ascertained truths, with principles which rest wholly on conjecture.*

The observations which have been now stated, with respect to the proper limits of philosophical curiosity, have too frequently escaped the attention of speculative men, in all the different departments of science. In none of these, however, has this inattention produced such a variety of errors and absurdities, as in the science of mind; a subject to which, till of late, it does not seem to have been suspected, that the general rules of philosophizing are applicable. The strange mixture of fact and hypothesis, which the greater part of metaphysical inquiries exhibit, had led almost universally to a belief, that it is only a very faint and doubtful light, which human reason can ever expect to throw on this dark, but interesting, field of speculation.

Besides this inattention to the proper limits of philosophical inquiry, other sources of error, from which the science of physics is entirely exempted, have contributed to retard the progress of the philosophy of mind. Of these, the most important proceed from that disposition, which is so natural to every person at the commencement of his philosophical pursuits, to explain intellectual and moral phenomena by the analogy of the material world.

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* There is indeed one view of the connexion betwen Mind and Matter, which is perfectly agreeable to the just rules of philosophy. The object of this is, to ascertain the laws which regulate their union, without attempting to explain in what manner they are united.

Lord Bacon was, I believe, the first who gave a distinct idea of this sort of speculation; and I do not know that much progress has yet been made in it. In his books *de Augmentis Scientiarum*, a variety of subjects are enumerated, in order to illustrate its nature: and, undoubtedly, most of these are in a high degree curious and important. The following list comprehends the chief of those he has mentioned; with the addition of several others, recommended to the consideration of Philosophers and of Medical Inquirers, by the late Dr. Gregory. See his *Lectures on the Duties and Qualifications of a Physician.*

1. The doctrine of the preservation and improvement of the different senses.
2. The history of the power and influence of imagination.
3. The history of the several species of enthusiasm.
4. The history of the various circumstances in parents, that have an influence on conception, and the constitution and characters of their children.
5. The history of dreams.
6. The history of the laws of custom and habit.
7. The history of the effects of music, and of such other things as operate on the mind and body, in consequence of impressions made on the senses.
8. The history of natural signs and language, comprehending the doctrine of physiognomy and of outward gesture.
9. The history of the power and laws of the principle of imitation.

To this list various other subjects might be added; particularly, the history of the laws of memory, in so far as they appear to be connected with the state of the body; and the history of the different species of madness.

This view of the connexion between Mind and Matter does not fall properly under the plan of the following work; in which my leading object is to ascertain the principles of our nature, in so far as they can be discovered by attention to the subjects of our own consciousness; and to apply these principles to explain the phenomena arising from them. Various incidental remarks, however, will occur in the course of our inquiries, tending to illustrate some of the subjects comprehended in the foregoing enumeration.

I before took notice of those habits of inattention to the subjects of our consciousness, which take their rise in that period of our lives, when we are necessarily employed in acquiring a knowledge of the properties and laws of matter. In consequence of this early familiarity with the phenomena of the material world, they appear to us less mysterious than those of mind; and we are apt to think that we have advanced one step in explaining the latter, when we can point out some analogy between them and the former. It is owing to the same circumstance, that we have scarcely any appropriated language with respect to mind, and that the words which express its different operations, are almost all borrowed from the objects of our senses. It must, however, appear manifest, upon a very little reflection, that as the two subjects are essentially distinct, and as each of them has its peculiar laws, the analogies we are pleased to fancy between them, can be of no use in illustrating either; and that it is no less unphilosophical to attempt an explanation of perception, or of the association of ideas, upon mechanical principles, than it would be to explain the phenomena of gravitation, by supposing, as some of the ancients did, the particles of matter to be animated with principles of motion; or to explain the chemical phenomena of elective attractions, by supposing the substances, among which they are observed, to be endowed with thought and volition. —The analogy of matter, therefore, can be of no use in the inquiries which form the object of the following work; but, on the contrary, is to be guarded against, as one of the principal sources of the errors to which we are liable.

Among the different philosophers who have speculated concerning the human mind, very few indeed can be mentioned, who have at all times been able to guard against analogical theories. At the same time, it must be acknowledged, that since the publication of Des Cartes' writings, there has been a gradual, and, on the whole, a very remarkable improvement in this branch of science. One striking proof of this is, the contrast between the metaphysical speculations of some of the most eminent philosophers in England at the end of the last century, and those which we find in the systems, however imperfect, of the present age. Would any writer now offer to the world such conclusions with respect to the mind, as are contained in the two following passages from Locke and Newton? "Habits," says Locke, "seem to be but trains of motion, in the animal spirits, which, once set a-going, continue in the same steps they had been used to, which, by often treading, are worn into a smooth path." And Newton himself has proposed the following query, concerning the manner in which the mind perceives external objects. "Is not," says he, "the sensorium of animals the place where the sentient substance is present, and to which the sensible species of things are brought, through the nerves and brain, that they may be perceived by the mind present in that place?"—In the course of the following Essays, I shall have occasion to quote various other passages from later writers, in which an attempt is made to explain the other phenomena of mind upon similar principles.

It is however much to be regretted, that even since the period when philosophers began to adopt a more rational plan of inquiry with respect to such subjects, they have been obliged to spend so much of their time in clearing away the rubbish collected by their predecessors. This indeed was a preliminary step, which the state of the science, and the conclusions to which it had led, rendered absolutely necessary; for, however important the positive advantages may be, which are to be expected from its future progress, they are by no means so essential to human improvement and happiness, as a satisfactory refutation of that skeptical philosophy, which had struck at the root of all knowledge and all belief. Such a refutation seems to have been the principal object which Dr. Reid proposed to himself in his metaphysical inquiries; and to this object his labors have been directed with so much ability, candor, and perseverance, that unless future skeptics should occupy a ground very different from that of their predecessors, it is not likely that the controversy will ever be renewed. The rubbish being now removed, and the foundations laid, it is time to begin the superstructure. The progress which I have made in it is, I am sensible, very inconsiderable; yet I flatter myself, that the little I have done, will be sufficient to illustrate the importance of the study, and to recommend the subjects, of which I am to treat, to the attention of others.

After the remarks which I have now made, the reader will not be surprised to find, that I have studiously avoided the consideration of those questions which have been agitated in the present age, between the patrons of the skeptical philosophy, and their opponents. These controversies have, in truth, no peculiar connexion with the inquiries on which I am to enter. It is indeed only by an examination of the principles of our nature, that they can be brought to a satisfactory conclusion; but supposing them to remain undecided, our skeptical doubts concerning the certainty of human knowledge, would no more affect the philosophy of mind, than they would affect any of the branches of physics; nor would our doubts concerning even the existence of mind, affect this branch of science, any more than the doubts of the Berkeleian, concerning the existence of matter, affect his opinions in natural philosophy.

To what purposes the philosophy of the human mind, according to the view which I propose to take of it, is subservient, I shall endeavour to explain, at some length, in the following section.

PART SECOND.

SECTION I.

Of the Utility of the Philosophy of the Human Mind.

It has been often remarked, that there is a mutual connexion between the different arts and sciences; and that the improvements which are made in one branch of human knowledge, frequently throw light on others, to which it has apparently a very remote relation. The modern discoveries in astronomy, and in pure mathematics, have contributed to bring the art of navigation to a degree of perfection formerly unknown. The rapid progress which has been lately made in astronomy, anatomy, and botany, has been chiefly owing to the aid which these sciences have received from the art of the optician.

Although, however, the different departments of science and of art mutually reflect light on each other, it is not always necessary either for the philosopher or the artist to aim at the acquisition of general knowledge. Both of them may safely take many principles for granted, without being able to demonstrate their truth. A seaman, though ignorant of mathematics, may apply, with correctness and dexterity, the rules for finding the longitude: an astronomer, or a botanist, though ignorant of optics, may avail himself of the use of a telescope, or the microscope.

These observations are daily exemplified in the case of the artist, who has seldom either inclination or leisure to speculate concerning the principles of his art. It is rarely, however, we meet with a man of science, who has confined his studies wholly to one branch of knowledge. That curiosity, which he has been accustomed to indulge in the course of his favourite pursuit, will naturally extend itself to every remarkable object which falls under his observation; and can scarcely fail to be a source of perpetual dissatisfaction to his mind, till it has been so far gratified as to enable him to explain all the various phenomena, which his professional habits are every day presenting to his view.

As every particular science is in this manner connected with others, to which it naturally directs the attention, so all the pursuits of life, whether they terminate in speculation or action, are connected with that general science, which has the human mind for its object. The powers of the understanding are instruments which all men employ; and his curiosity must be small indeed, who passes through life in a total ignorance of faculties, which his wants and necessities force him habitually to exercise, and which so remarkably distinguish man from the lower animals. The active principles of our nature, which, by their various modifications and combinations, give rise to all the moral differences among men, are fitted, in a still higher degree, if possible, to interest those, who are either disposed to reflect on their own characters, or to observe, with attention, the characters of others. The phenomena resulting from these faculties and principles of the mind, are every moment soliciting our notice; and open to our examination a field of discovery, as inexhaustible as the phenomena of the material world, and exhibiting not less striking marks of divine wisdom.

While all the sciences, and all the pursuits of life, have this common tendency to lead our inquiries to the philosophy of human nature, this last branch of knowledge borrows its principles from no other science whatever. Hence there is something in the study of it, which is peculiarly gratifying to a reflecting and inquisitive mind; and something in the conclusions to which it leads, on which the mind rests with peculiar satisfaction. Till once our opinions are in some degree fixed with respect to it, we abandon ourselves, with reluctance, to particular scientific investigations; and on the other hand, a general knowledge of such of its principles as are most fitted to excite the curiosity, not only prepares us for engaging in other pursuits with more liberal and comprehensive views, but leaves us at liberty to prosecute them with a more undivided and concentrated attention.

It is not, however, merely as a subject of speculative curiosity, that the principles of the human mind deserve a careful examination. The advantages to be expected from a successful analysis of it are various; and some of them of such importance, as to render it astonishing, that, amidst all the success with which the subordinate sciences have been cultivated, this, which comprehends the principles of all of them, should be still suffered to remain in its infancy.

I shall endeavour to illustrate a few of these advantages, beginning with what appears to me to be the most important of any; the light, which a philosophical analysis of the principles of the mind would necessarily throw on the subjects of intellectual and moral education.

The most essential objects of education are the two following: *First*, to cultivate all the various principles of our nature, both speculative and active, in such a manner as to bring them to the greatest perfection of which they are susceptible: and, secondly, by watching over the impressions and associations which the mind receives in early life, to secure it against the influence of prevailing errors; and, as far as possible, to engage its prepossessions on the side of truth. It is only upon a philosophical analysis of the mind, that a systematical plan can be founded, for the accomplishment of either of these purposes.

There are few individuals, whose education has been conducted in every respect with attention and judgment. Almost every man of reflection is conscious, when he arrives at maturity, of many defects in his mental powers; and of many inconvenient habits, which might have been prevented or remedied in his infancy or youth. Such a consciousness is the first step towards improvement; and the person who feels it, if he is possessed of resolution and steadiness, will not scruple to begin, even in advanced years, a new course of education for himself. The degree of reflection and observation, indeed, which is necessary for this purpose, cannot be expected from any one at a very early period of life, as these are the last powers of the mind which unfold themselves; but it is never too late to think of the improvement of our faculties; and much progress may be made, in the art of applying them successfully to their proper objects, or in obviating the inconveniences resulting from their imperfection, not only in manhood, but in old age.

It is not, however, to the mistakes of our early instructors, that all our intellectual defects are to be ascribed. There is no profession or pursuit which has not habits peculiar to itself; and which does not leave some powers of the mind dormant, while it exercises and improves the rest. If we wish, therefore, to cultivate the mind to the extent of its capacity, we must not rest satisfied with that employment which its faculties receive from our particular situation in life. It is not in the awkward and professional form of a mechanic, who has strengthened particular muscles of his body by the habits of his trade, that we are to look for the perfection of our animal nature: neither is it among men of confined pursuits, whether speculative or active, that we are to expect to find the human mind in its highest state of cultivation. A variety of exercises is necessary to preserve the animal frame in vigor and beauty; and a variety of those occupations which literature and science afford, added to a promiscuous intercourse with the world, in the habits of conversation and business, is no less necessary for the improvement of the understanding. I acknowledge, that there are some professions, in which a man of very confined acquisitions may arrive at the first eminence; and in which he will perhaps be the more likely to excel, the more he has concentrated the whole force of his mind to one particular object. But such a person, however distinguished in his own sphere, is educated merely to be a literary artisan; and neither attains the perfection, nor the happiness of his nature. "That education only can be considered as complete and generous, which," in the language of Milton, "fits a man to perform justly, skilfully, and magnanimously, all the offices, both private and public, of peace and of war."*

I hope it will not be supposed, from the foregoing observations, that they are meant to recommend an indiscriminate attention to all the objects of speculation and of action. Nothing can be more evident, than the necessity of limiting the field of our exertion, if we wish to benefit society by our labors. But it is perfectly consistent with the most intense application to our favorite pursuit, to cultivate that general acquaintance with letters and with the world, which may be sufficient to enlarge the mind, and to preserve it from any danger of contracting the pedantry of a particular profession. In many cases, (as was already remarked,) the sciences reflect light on each other; and the general acquisitions, which we have made in other pursuits, may furnish us with useful helps for the farther prosecution of our *own*. But even in those instances in which the case is otherwise, and in which these liberal accomplishments must be purchased by the sacrifice of a part of our professional eminence, the acquisition of them will amply repay any loss we may sustain. It ought not to be the leading object of any one, to become an eminent metaphysician, mathematician, or poet; but to render himself happy as an individual, and an agreeable, a respectable, and an useful member of society. A man who loses his sight, improves the sensibility of his touch; but who would consent, for such a recompense, to part with the pleasures which he receives from the eye?

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* Tractate of Education.

It is almost unnecessary for me to remark, how much individuals would be assisted in the proper and liberal culture of the mind, if they were previously led to take a comprehensive survey of human nature in all its parts; of its various faculties, and powers, and sources of enjoyment; and of the effects which are produced on these principles by particular situations. It is such a knowledge alone of the capacities of the mind, that can enable a person to judge of his own acquisitions; and to employ the most effectual means for supplying his defects, and removing his inconvenient habits. Without some degree of it, every man is in danger of contracting bad habits, before he is aware; and of suffering some of his powers to go to decay, for want of proper exercise.

If the business of early education were more thoroughly and more generally understood, it would be less necessary for individuals, when they arrive at maturity, to form plans of improvement for themselves. But education never can be systematically directed to its proper objects, till we have obtained, not only an accurate analysis of the general principles of our nature, and an account of the most important laws which regulate their operation; but an explanation of the various modifications and combinations of these principles, which produce that diversity of talents, genius, and character, we observe among men. To instruct youth in the languages, and in the sciences, is comparatively of little importance, if we are inattentive to the habits they acquire; and are not careful in giving, to all their different faculties, and all their different principles of action, a proper degree of employment. Abstracting entirely from the culture of their moral powers, how extensive and difficult is the business of conducting their intellectual improvement! To watch over the associations which they form in their tender years; to give them early habits of mental activity; to rouse their curiosity, and to direct it to proper objects; to exercise their ingenuity and invention; to cultivate in their minds a turn for speculation, and at the same time preserve their attention alive to the objects around them; to awaken their sensibilities to the beauties of nature, and to inspire them with a relish for intellectual enjoyment;—these form but a part of the business of education; and yet the execution even of this part requires an acquaintance with the general principles of our nature, which seldom falls to the share of those to whom the instruction of youth is commonly intrusted.—Nor will such a theoretical knowledge of the human mind, as I have now described, be always sufficient in practice. An uncommon degree of sagacity is frequently requisite, in order to accommodate general rules to particular tempers and characters. In whatever way we choose to account for it, whether by original organization, or by the operation of moral causes in very early infancy; no fact can be more undeniable, than that there are important differences discernible in the minds of children, previous to that period at which, in general, their intellectual education commences. There is, too, a certain hereditary character, (whether resulting from physical constitution, or caught from imitation and the influence of situation,) which appears remarkably in particular families. One race, for a succession of generations, is distinguished by a genius for the abstract sciences, while it is deficient in vivacity, in imagination, and in taste: another is no less distinguished for wit, and gaiety, and fancy; while it appears incapable of patient attention, or of profound research. The system of education, which is proper to be adopted in particular cases, ought, undoubtedly, to have some reference to these circumstances; *and to be* calculated, as much as possible, to develope and to cherish those intellectual and active principles, in which a natural deficiency is most to be apprehended. Montesquieu, and other speculative politicians, have insisted much on the reference which education and laws should have to climate. I shall not take upon me to say, how far their conclusions on this subject are just; but I am fully persuaded, that there is a foundation in philosophy, and good sense, for accommodating, at a very early period of life, the education of individuals to those particular turns of mind, to which, from hereditary propensities, or from moral situation, they may be presumed to have a natural tendency.

There are few subjects more hackneyed than that of education; and yet there is none, upon which the opinions of the world are still more divided. Nor is this surprising; for most of those who have speculated concerning it, have confined their attention chiefly to incidental questions about the comparative advantages of public or private instruction, or the utility of particular languages or sciences; without attempting a previous examination of those faculties and principles of the mind, which it is the great object of education to improve. Many excellent detached observations, indeed, both on the intellectual and moral powers, are to be collected from the writings of ancient and modern authors; but I do not know that in any language an attempt has been made to analyze and illustrate the principles of human nature, in order to lay a philosophical foundation for their proper culture.

I have even heard some very ingenious and intelligent men dispute the propriety of so systematical a plan of instruction. The most successful and splendid exertions, both in the sciences and arts, (it has been frequently remarked,) have been made by individuals, in whose minds the seeds of genius were allowed to shoot up, wild and free; while, from the most careful and skilful tuition, seldom one thing results above mediocrity. I shall not, at present, enter into any discussions with respect to the certainty of the fact on which this opinion is founded. Supposing the fact to be completely established, it must still be remembered, that originality of genius does not always imply vigor, and comprehensiveness, and liberality of mind; and that it is desirable only, in so far as it is compatible with these more valuable qualities. I already hinted, that there are some pursuits, in which, as they require the exertion only of a small number of our faculties, an individual, who has a natural turn for them, will be more likely to distinguish himself, by being suffered to follow his original bias, than if his attention were distracted by a more liberal course of study. But wherever such men are to be found, they must be considered, on the most favorable supposition, as having sacrificed, to a certain degree, the perfection and the happiness of their nature, to the amusement or instruction of others. It is, too, in times of general darkness and barbarism, that what is commonly called originality of genius most frequently appears: and surely the great aim of an enlightened and benevolent philosophy, is not to rear a small number of individuals, who may be regarded as prodigies in an ignorant and admiring age, but to diffuse, as widely as possible, that degree of cultivation which may enable the bulk of a people to possess all the intellectual and moral improvement of which their nature is susceptible. "Original genius," says Voltaire, "occurs but seldom in a nation where the literary taste is formed. The number of cultivated minds which there abound, like the trees in a thick and flourishing forest, prevent any single individual from rearing his head far above the rest. Where trade is in few hands, we meet with a small number of overgrown fortunes in the midst of a general poverty: in proportion as it extends, opulence becomes general, and great fortunes rare. It is, precisely, because there is at present much light, and much cultivation, in France, that we are led to complain of the want of superior genius."

To what purpose, indeed, it may be said, all this labor? Is not the importance of every thing to man, to be ultimately estimated by its tendency to promote his happiness? And is not our daily experience sufficient to convince us, that this is, in general, by no means proportioned to the culture which his nature has received? Nay, is there not some ground for suspecting, that the lower orders of men enjoy, on the whole, a more enviable condition, than their more enlightened and refined superiors?

The truth, I apprehend, is, that happiness, in so far as it arises from the mind itself, will be always proportioned to the degree of perfection which its powers have attained; but that in cultivating these powers, with a view to this most important of all objects, it is essentially necessary that such a degree of attention be bestowed on all of them, as may preserve them in that state of relative strength, which appears to be agreeable to the intentions of nature. In consequence of an exclusive attention to the culture of the imagination, the taste, the reasoning faculty, or any of the active principles, it is possible that the pleasures of human life may be diminished, or its pains increased; but the inconveniences which are experienced in such cases, are not to be ascribed to education, but to a partial and injudicious education. In such cases, it is possible, that the poet, the metaphysician, or the man of taste and refinement, may appear to disadvantage, when compared with the vulgar; for such is the benevolent appointment of Providence with respect to the lower orders, that, although not one principle of their nature be completely unfolded, the whole of these principles preserve among themselves that balance, which is favorable to the tranquillity of their minds, and to a prudent and steady conduct in the limited sphere which is assigned to them, far more completely, than in those of their superiors, whose education has been conducted on an erroneous or imperfect system: but all this, far from weakening the force of the foregoing observations, only serves to demonstrate, how impossible it always will be, to form a rational plan for the improvement of the mind, without an accurate and comprehensive knowledge of the principles of the human constitution.

The remarks which have been already made, are sufficient to illustrate the dangerous consequences, which are likely to result from a partial and injudicious cultivation of the mind; and, at the same time, to point out the utility of the intellectual philosophy, in enabling us to preserve a proper balance among all its various faculties, principles of action, and capacities of enjoyment. Many additional observations might be offered, on the tendency, which an accurate analysis of its powers might probably have, to suggest rules for their farther improvement, and for a more successful application of them to their proper purposes: but this subject I shall not prosecute at present, as the illustration of it is one of the leading objects of the following work.—That the memory, the imagination, or the reasoning faculty, are to be instantly strengthened in consequence of our speculations concerning their nature, it would be absurd to suppose; but it is surely far from being unreasonable to think, that an acquaintance with the laws, which regulate these powers, may suggest some useful rules for their gradual cultivation, for remedying their defects in the case of individuals, and even for extending those limits, which nature seems, at first view, to have assigned them.

To how great a degree of perfection the intellectual and moral nature of man is capable of being raised by cultivation, it is difficult to conceive. The effects of early, continued, and systematical education, in the case of those children who are trained, for the sake of gain, to feats of strength and agility, justify, perhaps, the most sanguine views which it is possible for a philosopher to form, with respect to the improvement of the species.

I now proceed to consider, how far the philosophy of mind may be useful in accomplishing the second object of education; by assisting us in the management of early impressions and associations.

By far the greater part of the opinions on which we act in life, are not the result of our own investigations; but are adopted implicitly, in infancy and youth, upon the authority of others. Even the great principles of morality, although implanted in every heart, are commonly aided and cherished, at least to a certain degree, by the care of our instructers.—All this is undoubtedly agreeable to the intentions of nature; and, indeed, were the case otherwise, society could not subsist; for nothing can be more evident, than that the bulk of mankind, condemned as they are to laborious occupations, which are incompatible with intellectual improvement, are perfectly incapable of forming their own opinions on some of the most important subjects that can employ the human mind. It is evident, at the same time, that as no system of education is perfect, a variety of prejudices must in this way take an early hold on our belief; so as to acquire over it an influence not inferior to that of the most incontrovertible truths. When a child hears, either a speculative absurdity, or an erroneous principle of action, recommended and enforced daily, by the same voice which first conveyed to it those simple and sublime lessons of morality and religion which are congenial to its nature, is it to be wondered at, that, in future life, it should find it so difficult to eradicate prejudices which have twined their roots with all the essential principles of the human frame?—If such, however, be the obvious intentions of nature, with respect to those orders of men who are employed in bodily labor, it is equally clear, that she meant to impose it as a double obligation on those who receive the advantages of a liberal education, to examine, with the most scrupulous care, the foundation of all those received opinions, which have any connexion with morality, or with human happiness. If the multitude must be led, it is of consequence, surely, that it should be led by enlightened conductors; by men who are able to distinguish truth from error; and to draw the line between those prejudices which are innocent or salutary, (if indeed there are any prejudices which are really salutary,) and those which are hostile to the interests of virtue and of mankind.

In such a state of society as that in which we live, the prejudices of a moral, a political, and a religious nature, which we imbibe in early life, are so various, and at the same time so intimately blended with the belief we entertain of the most sacred and important truths, that a great part of the life of a philosopher must necessarily be devoted, not so much to the acquisition of new knowledge, as to unlearn the errors, to which he had been taught to give an implicit assent, before the dawn of reason and reflection. And unless he submit in this manner to bring all his opinions to the test of a severe examination, his ingenuity and his learning, instead of enlightening the world, will only enable him to give an additional currency and an additional authority to established errors. To attempt such a struggle against early prejudices, is, indeed, the professed aim of all philosophers; but how few are to be found who have force of mind sufficient for accomplishing their object; and who, in freeing themselves from one set of errors, do not allow themselves to be carried away with another? To succeed in it completely, Lord Bacon seems to have thought, (in one of the most remarkable passages of his writings,) to be more than can well be expected from human frailty.—"Nemo adhuc tantâ mentis constantiâ inventus est, ut decreverit, et sibi imposuerit, theorias et notiones communes penitus abolere, et intellectum abrasum et æquum ad particularia, de integro, applicare. Itaque illa ratio humana, quam habemus, ex multâ fide, et multo etiam casu, nec non ex puerilibus, quas primo hausimus, notionibus, farrago quædam est, et congeries. Quod siquis, ætate maturâ, et sensibus integris, et mente repurgatâ, se ad experientiam, et ad particularia de integro applicet, de eo melius sperandum est."

Nor is it merely in order to free the mind from the influence of error, that it is useful to examine the foundation of established opinions. It is such an examination alone, that, in an inquisitive age like the present, can secure a philosopher from the danger of unlimited skepticism. To this extreme, indeed, the complexion of the times is more likely to give him a tendency, than to implicit credulity. In the former ages of ignorance and superstition, the intimate association which had been formed, in the prevailing systems of education, between truth and error, had given to the latter an ascendant over the minds of men, which it could never have acquired, if divested of such an alliance. The case has, of late years, been most remarkably reversed: the *common sense* of mankind, in consequence of the growth of a more liberal spirit of inquiry, has revolted against many of those absurdities, which had so long held human reason in captivity; and it was, perhaps, more than could reasonably have been expected, that, in the first moments of their emancipation, philosophers should have stopped short, at the precise boundary, which cooler reflection, and more moderate views, would have prescribed. The fact is, that they have passed far beyond it; and that, in their zeal to destroy prejudices, they have attempted to tear up by the roots, many of the best and happiest and most essential principles of our nature. Having remarked the powerful influence of education over the mind, they have concluded, that man is wholly a factitious being; not recollecting, that this very susceptibility of education presupposes certain original principles, which are common to the whole species; and that, as error can only take a permanent hold of a candid mind by being grafted on truths, which it is unwilling or unable to eradicate, even the influence, which false and absurd opinions occasionally acquire over the belief, instead of being an argument for universal skepticism, is the most decisive argument against it; inasmuch as it shows, that there are some truths so incorporated and identified with our nature, that they can reconcile us even to the absurdities and contradictions with which we suppose them to be inseparably connected. The skeptical philosophers, for example, of the present age, have frequently attempted to hold up to ridicule those contemptible and puerile superstitions, which have disgraced the creeds of some of the most enlightened nations; and which have not only commanded the assent, but the reverence of men of the most accomplished understandings. But these histories of human imbecility, are, in truth, the strongest testimonies which can be produced to prove, how wonderful is the influence of the fundamental principles of morality over the belief; when they are able to sanctify, in the apprehensions of mankind, every extravagant opinion, and every unmeaning ceremony, which early education has taught us to associate with them.

That implicit credulity is a mark of a feeble mind, will not be disputed; but it may not, perhaps, be as generally acknowledged, that the case is the same with unlimited skepticism: on the contrary, we are sometimes apt to ascribe this disposition to a more than ordinary vigor of intellect. Such a prejudice was by no means unnatural at that period in the history of modern Europe, when reason first began to throw off the yoke of authority; and when it unquestionably required a superiority of understanding, as well as of intrepidity, for an individual to resist the contagion of prevailing superstition. But in the present age, in which the tendency of fashionable opinions is directly opposite to those of the vulgar; the philosophical creed, or the philosophical skepticism, of by far the greater number of those who value themselves on an emancipation from popular errors, arises from the very same weakness with the credulity of the multitude: nor is it going too far to say, with Rousseau, that "He, who, in the end of the eighteenth century, has brought himself to abandon all his early principles without discrimination, would probably have been a bigot in the days of the League." In the midst of these contrary impulses of fashionable and of vulgar prejudices, he alone evinces the superiority and the strength of his mind, who is able to disentangle truth from error; and to oppose the clear conclusions of his own unbiassed faculties, to the united clamors of superstition, and of false philosophy.—Such are the men, whom nature marks out to be the lights of the world, to fix the wavering opinions of the multitude, and to impress their own characters on that of their age.

For securing the mind completely from the weaknesses I have now been describing, and enabling it to maintain a steady course of inquiry, between implicit credulity and unlimited skepticism, the most important of all qualities is a sincere and devoted attachment to truth, which seldom fails to be accompanied with a manly confidence in the clear conclusions of human reason. It is such a confidence, united (as it generally is) with *personal intrepidity*, which forms what the *French writers* call force of character; one of the rarest endowments, it must be confessed, of our species; but which, of all endowments, is the most essential for rendering a philosopher happy in himself, and a blessing to mankind.

There is, I think, good reason for hoping, that the skeptical tendency of the present age will be only a temporary evil. While it continues, however, it is an evil of the most alarming nature; and, as it extends, in *general*, not only to religion and morality, but, in some measure, also to politics, and the conduct of life, it is equally fatal to the comfort of the individual, and to the improvement of society. Even in its most inoffensive form, when it happens to be united with a peaceable disposition and a benevolent heart, it cannot fail to have the effect of damping every active and patriotic exertion. *Convinced that* truth is placed beyond the reach of the human faculties; and doubtful how far the prejudices we despise may not be essential to the well-being of society, we resolve to abandon completely all speculative inquiries; and, suffering ourselves to be carried quietly along with the stream of popular opinions, and of fashionable manners, determine to amuse ourselves, the best way we can, with business or pleasure, during our short passage through this scene of illusions. But he who thinks more favorably of the human powers, and who believes that reason was given to man to direct him to his duty and his happiness, will despise the suggestions of this timid philosophy; and while he is conscious that he is guided in his inquiries only by the love of truth, will rest assured that their result will be equally favorable to his own comfort, and to the best interests of mankind. What, indeed, will be the particular effects, in the first instance, of that general diffusion of knowledge, which the art of printing must sooner or later produce, and of that spirit of reformation with which it cannot fail to be accompanied, it is beyond the reach of human sagacity to conjecture; but unless we choose to abandon ourselves entirely to a desponding skepticism, we must hope and believe, that the progress of human reason can never be a source of permanent disorder to the world; and that they alone have cause to apprehend the consequences, who are led, by the imperfection of our present institutions, to feel themselves interested in perpetuating the prejudices and follies of their species.

From the observations which have been made, it sufficiently appears, that in order to secure the mind, on the one hand, from the influence of prejudice; and on the other, from a tendency to unlimited skepticism, it is necessary that it should be able to distinguish the original and universal principles and laws of human nature, from the adventitious effects of local situation. But if, in the case of an individual, who has received an imperfect or erroneous education, such a knowledge puts it in his power to correct, to a certain degree, his own bad habits, and to surmount his own speculative errors, it enables him to be useful in a much higher degree, to those whose education he has an opportunity of superintending from early infancy. Such, and so permanent, is the effect of first impressions on the character, that although a philosopher may succeed, by perseverance, in freeing his reason from the prejudices with which it was entangled, they will still retain some hold of his imagination and his affections: and, therefore, however enlightened his understanding may be in his hours of speculation, his philosophical opinions will frequently lose their influence over his mind, in those very situations in which their practical assistance is most required:—when his temper is soured by misfortune; or when he engages in the pursuits of life, and exposes himself to the contagion of popular errors. His opinions are supported merely by speculative arguments; and, instead of being connected with any of the active principles of his nature, are counteracted and thwarted by some of the most powerful of them. How different would the case be, if education were conducted, from the beginning, with attention and judgment? Were the same pains taken to impress truth on the mind in early infancy, that is often taken to inculcate error, the great principles of our conduct would not only be juster than they are; but in consequence of the aid which they would receive from the imagination and the heart, trained to conspire with them in the same direction, they would render us happier in ourselves, and would influence our practice more powerfully and more habitually. There is surely nothing in error which is more congenial to the mind than truth. On the contrary, when exhibited separately and alone to the understanding, it shocks our reason, and provokes our ridicule; and it is only (as I had occasion already to remark) by an alliance with truths, which we find it difficult to renounce, that it can obtain our assent, or command our reverence. What advantages, then, might be derived from a proper attention to early impressions and associations, in giving support to those principles which are connected with human happiness? The long reign of error in the world, and the influence it maintains, even in an age of liberal inquiry, far from being favorable to the supposition, that human reason is destined to be for ever the sport of prejudice and absurdity, demonstrates the tendency which there is to permanence in established opinions, and in established institutions; and promises an eternal stability to true philosophy, when it shall once have acquired the ascendant; and when proper means shall be employed to support it, by a more perfect system of education.

Let us suppose, for a moment, that this happy era were arrived, and that all the prepossessions of childhood and youth were directed to support the pure and sublime truths of an enlightened morality.—With what ardor, and with what transport would the understanding, when arrived at maturity, proceed in the search of truth; when, instead of being obliged to struggle, at every step, with early prejudices, its office was merely to add the force of philosophical conviction to impressions, which are equally delightful to the imagination, and dear to the heart! The prepossessions of childhood, would, through the whole of life, be gradually acquiring strength from the enlargement of our knowledge; and, in their turn, would fortify the conclusions of our reason, against the skeptical suggestions of disappointment or melancholy.

Our daily experience may convince us, how susceptible the tender mind is of deep impressions; and what important and permanent effects are produced on the characters and the happiness of individuals, by the casual associations formed in childhood among the various ideas, feelings, and affections, with which they were habitually occupied. It is the business of education not to counteract this constitution of nature, but to give it a proper direction: and the miserable consequences to which it leads, when under an improper regulation, only show, what an important instrument of human improvement it might be rendered, in more skilful hands. If it be possible to interest the imagination and the heart in favor of error, it is, at least, no less possible to interest them in favor of truth. If it be possible to extinguish all the most generous and heroic feelings of our nature, by teaching us to connect the idea of them with those of guilt and impiety, it is surely equally possible to cherish and strengthen them, by establishing the natural alliance between our duty and our happiness. If it be possible for the influence of fashion to veil the native deformity of vice, and to give to low and criminal indulgences the appearance of spirit, of elegance, and of gaiety; can we doubt of the possibility of connecting, in the tender mind, these pleasing associations, with pursuits that are truly worthy and honorable?—There are few men to be found, among those who have received the advantages of a liberal education, who do not retain, through life, that admiration of the heroic ages of Greece and Rome, with which the classical authors once inspired them. It is, in truth, a fortunate prepossession, on the whole, and one, of which I should be sorry to counteract the influence. But are there not others of equal importance to morality and to happiness, with which the mind might, at the same period of life, be inspired? If the first conceptions, for example, which an infant formed of the Deity, and its first moral perceptions, were associated with the early impressions produced on the heart by the beauties of nature, or the charms of poetical description, those serious thoughts which are resorted to, by most men, merely as a source of consolation in adversity, and which, on that very account, are frequently tinctured with some degree of gloom, would recur spontaneously to the mind in its best and happiest hours; and would insensibly blend themselves with all its purest and most refined enjoyments.

In those parts of Europe, where the prevailing opinions involve the greatest variety of errors and corruptions, it is, I believe, a common idea with many respectable and enlightened men, that, in every country, it is most prudent to conduct the religious instruction of youth upon the plan which is prescribed by the national establishment; in order that the pupil, according to the vigor or feebleness of his mind, may either shake off, in future life, the prejudices of the nursery, or die in the popular persuasion. This idea, I own, appears to me to be equally ill-founded and dangerous. If religious opinions have, as will not be disputed, a powerful influence on the happiness, and on the conduct of mankind, does not humanity require of us, to rescue as many victims as possible from the hands of bigotry; and to save them from the cruel alternative, of remaining under the gloom of a depressing superstition, or of being distracted by a perpetual conflict between the heart and the understanding?—It is an enlightened education alone, that, in most countries of Europe, can save the young philosopher from that anxiety and despondence, which every man of sensibility, who, in his childhood, has imbibed the popular opinions, must necessarily experience, when he first begins to examine their foundation; and, what is of still greater importance, which can save him, during life, from that occasional skepticism, to which all men are liable, whose systems fluctuate with the inequalities of their spirits, and the variations of the atmosphere.

I shall conclude this subject, with remarking, that, although, in all moral and religious systems, there is a great mixture of important truth, and although it is in consequence of this alliance, that errors and absurdities are enabled to preserve their hold of the belief, yet it is commonly found, that, in proportion as an established creed is complicated in its dogmas and in its ceremonies, and in proportion to the number of accessory ideas which it has grafted upon the truth, the more difficult is it, for those who have adopted it in childhood, to emancipate themselves completely from its influence; and, in those cases in which they at last succeed, the greater is their danger of abandoning, along with their errors, all the truths which they had been taught to connect with them. The Roman Catholic system is shaken off with much greater difficulty, than those which are taught in the reformed churches; but when it loses its hold of the mind, it much more frequently prepares the way for unlimited skepticism. The causes of this I may perhaps have an opportunity of pointing out, in treating of the association of ideas.

I have now finished all that I think necessary to offer, at present, on the application of the philosophy of mind to the subject of education. To some readers, I am afraid, that what I have advanced on the subject, will appear to border upon enthusiasm; and I will not attempt to justify myself against the charge. I am well aware of the tendency which speculative men sometimes have, to magnify the effects of education, as well as to entertain too sanguine views of the improvement of the world; and I am ready to acknowledge, that there are instances of individuals, whose vigor of mind is sufficient to overcome every thing that is pernicious in their early habits: but I am fully persuaded, that these instances are rare; and that by far the greater part of mankind continue, through life, to pursue the same track into which they have been thrown by the accidental circumstances of situation, instruction, and example.

PART SECOND.

SECTION II.

Continuation of the same Subject.

The remarks which have been hitherto made, on the utility of the philosophy of the human mind, are of a very general nature, and apply equally to all descriptions of men. Besides, however, these more obvious advantages of the study, there are others, which, though less striking and less extensive in their application, are nevertheless, to some particular classes of individuals, of the highest importance. Without pretending to exhaust the subject, I shall offer a few detached observations upon it, in this section.

I already took notice, in general terms, of the common relation which all the different branches of our knowledge bear to the philosophy of the human mind. In consequence of this relation, it not only forms an interesting object of curiosity to literary men of every denomination, but if successfully prosecuted, it cannot fail to furnish useful lights for directing their inquiries; whatever the nature of the subjects may be, which happen to engage the attention.

In order to be satisfied of the justness of this observation, it is sufficient to recollect, that to the philosophy of the mind are to be referred all our inquiries concerning the divisions and the classifications of the objects of human knowledge, and also, all the various rules, both for the investigation, and the communication, of truth. These general views of science, and these general rules of method, ought to form the subjects of a rational and useful logic; a study, undoubtedly, in itself of the greatest importance and dignity, but in which less progress has hitherto been made than is commonly imagined.

I shall endeavour to illustrate, very briefly, a few of the advantages which might be expected to result from such a system of logic, if properly executed.

I. And, in the first place, it is evident, that it would be of the highest importance in all the sciences, (in some of them, indeed, much more than in others,) to exhibit a precise and steady idea of the objects which they present to our inquiry. What was the principal circumstance which contributed to mislead the ancients, in their physical researches? Was it not their confused and wavering notions about the particular class of truths, which it was their business to investigate? It was owing to this that they were led to neglect the obvious phenomena and laws of moving bodies; and to indulge themselves in conjectures about the efficient causes of motion, and the nature of those minds, by which they conceived the particles of matter to be animated; and that they so often blended the history of facts with their metaphysical speculations. In the present state of science, indeed, we are not liable to such mistakes in natural philosophy, but it would be difficult to mention any other branch of knowledge, which is entirely exempted from them. In metaphysics, I might almost say, they are at the bottom of all our controversies. In the celebrated dispute, for example, which has been so long carried on, about the explanation given by the ideal theory of the phenomena of perception, the whole difficulty arose from this, that philosophers had no precise notion of the point they wished to ascertain; and now, that the controversy has been brought to a conclusion, (as I think all men of candour must confess it to have been by Dr. Reid,) it will be found, that his doctrine on the subject throws no light whatever on what was generally understood to be the great object of inquiry; I mean, on the mode of communication between the mind and the material world: and, in truth, amounts only to a precise description of the fact, stripped of all hypothesis, and stated in such a manner as to give us a distinct view of the insurmountable limits which nature has in this instance prescribed to our curiosity. The same observation may be made, on the reasonings of this profound and original author, with respect to some metaphysical questions that had been started on the subject of vision; in particular, concerning the cause of our seeing objects single with two eyes, and our seeing objects erect, by means of inverted images on the retina.

If we were to examine, in like manner, the present state of morals, of jurisprudence, of politics, and of philosophical criticism, I believe we should find, that the principal circumstance which retards their progress, is the vague and indistinct idea, which those who apply to the study of them have formed to themselves of the objects of their researches. Were these objects once clearly defined, and the proper plan of inquiry for attaining them illustrated by a few unexceptionable models, writers of inferior genius would be enabled to employ their industry to much more advantage; and would be prevented from adding to that rubbish, which, in consequence of the ill-directed ingenuity of our predecessors, obstructs our progress in the pursuit of truth.

As a philosophical system of logic would assist us in our particular scientific investigations, by keeping steadily in our view the attainable objects of human curiosity, so, by exhibiting to us the relation in which they all stand to each other, and the relation which they all bear to what ought to be their common aim, the advancement of human happiness, it would have a tendency to confine industry and genius to inquiries which are of real practical utility; and would communicate a dignity to the subordinate pursuits, which are in any respect subservient to so important a purpose. When our views are limited to one particular science, to which we have been led to devote ourselves by taste or by accident, the course of our studies resembles the progress of a traveller through an unexplored country, whose wanderings, from place to place, are determined merely by the impulse of occasional curiosity, and whose opportunities of information must necessarily be limited to the objects which accidentally present themselves to his notice. It is the philosophy of the mind alone, which, by furnishing us with a general map of the field of human knowledge, can enable us to proceed with steadiness, and in a useful direction; and while it gratifies our curiosity, and animates our exertions, by exhibiting to us all the various bearings of our journey, can conduct us to those eminences from whence the eye may wander over the vast and unexplored regions of science. Lord Bacon was the first person who took this comprehensive view of the different departments of study; and who pointed out, to all the classes of literary men, the great end to which their labours should conspire; the multiplication of the sources of human enjoyment, and the extension of man's dominion over nature. Had this object been kept steadily in view by his followers, their discoveries, numerous and important as they have been, would have advanced with still greater rapidity, and would have had a much more extensive influence on the practical arts of life.*

From such a system of logic, too, important assistance might be expected, for reforming the established plan of public or academical education. It is melancholy to reflect on the manner in which this is carried on, in most, perhaps, I might say, in all the countries of Europe; and that, in an age of comparative light and liberality, the intellectual and moral characters of youth should continue to be formed on a plan devised by men who were not only strangers to the business of the world, but who felt themselves interested in opposing the progress of useful knowledge.

For accomplishing a reformation in the plan of academical study, on rational and systematical principles, it is necessary, in the first place, to consider the relation in which the different branches of literature, and the different arts and sciences stand to each other, and to the practical purposes of life: and, secondly, to consider them in relation to the human mind, in order to determine the arrangement, best fitted for unfolding and maturing its faculties. Many valuable hints towards such a work may be collected from Lord Bacon's writings.

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* Omnium autem gravissimus error in deviatione ab ultimo doctrinarum fine consistit. Appetunt enim homines scientiam, alii ex inistâ curiositate et irrequietâ; alii animi causâ et delectationis alii existimationis gratiâ; alii contentionis ergo, atque ut in disserendo superiores sint: plerique propter lucrum et victum: paucissmi, ut donum rationis, divinitus datum, in usus humani generis impendant. Hoc enim illud est, quod revera doctrinam atque artes condecoraret, et attolleret, si contemplatio, et actio, arctiore quam adhuc vinculo copularentur. *De Aug. Scient.* lib. i.

II. Another very important branch of a rational system of logic (as I had occasion already to observe) ought to be, to lay down the rules of investigation which it is proper to follow in the different sciences. In all of these, the faculties of the understanding are the instruments with which we operate; and without a previous *knowledge of* their nature, it is impossible to employ them to the best advantage. In every exercise of our reasoning and of our inventive powers, there are general laws which regulate the progress of the mind; and when once these laws are ascertained, they enable us to speculate and to invent, for the future, with more system, and with greater certainty of success.—In the mechanical arts, it is well known, how much time and ingenuity are misapplied, by those who acquire their practical skill by their own trials, undirected by the precepts or example of others. What we call the rules of an art, are merely a collection of general observations, suggested by long experience, with respect to the most compendious and effectual means of performing every different step of the processes which the art involves. In consequence of such rules, the artist is enabled to command the same success in all his operations, for which the unskilled workman must trust to a happy combination of accidental circumstances; the misapplications, too, of the labor of one race are saved to the next; and the acquisition of practical address is facilitated, by confining its exertions to one direction.—The analogy is perfect, in those processes which are purely intellectual, and to regulate which is the great object of logic. In the case of individuals, who have no other guide to direct them in their inquiries than their own natural sagacity, much time and ingenuity must inevitably be thrown away, in every exertion of the inventive powers. In proportion, however, to the degree of their experience and observation, the number of these misapplications will diminish; and the power of invention will be enabled to proceed with more certainty and steadiness to its object. The misfortune is, that as the aids, which the understanding derives from experience, are seldom recorded in writing, or even described in words, every succeeding inquirer finds himself, at the commencement of his philosophical pursuits, obliged to struggle with the same disadvantages which had retarded the progress of his predecessors. If the more important practical rules, which habits of investigation suggest to individuals, were diligently preserved, each generation would be placed in circumstances more favorable to invention than the preceding; and the progress of knowledge, instead of cramping original genius, would assist and direct its exertions. In the infancy of literature, indeed, its range may be more unbounded, and its accidental excursions may excite more astonishment, than in a cultivated and enlightened age; but it is only in such an age, that inventive genius can be trained by rules founded on the experience of our predecessors, in such a manner as to insure the gradual and regular improvement of science. So just is the remark of Lord Bacon: "Certo sciant homines, artes inveniendi solidas et veras adolescere et incrementa sumere cum ipis inventis."

The analogy between the mechanical arts, and the operations of scientific invention, might perhaps be carried further. In the former, we know how much the natural powers of man have been assisted, by the use of tools and instruments. Is it not possible to devise, in like manner, certain aids to our intellectual faculties?

That such a query is not altogether chimerical, appears from the wonderful effects of algebra (which is precisely such an instrument of thought, as I have been now alluding to) in facilitating the inquiries of modern mathematicians. Whether it might not be possible to realize a project which Leibnitz has somewhere mentioned, of introducing a similar contrivance into other branches of knowledge, I shall not take upon me to determine; but that this idea has at least some plausibility, must, I think, be evident to those who have reflected on the nature of the general terms which abound more or less in every cultivated language; and *which* may be considered as one species of instrumental aid, which art has discovered to our intellectual powers. From the observations which I am afterwards to make, it will appear, that, without general terms, all our reasonings must necessarily have been limited to particulars; and, consequently, it is owing to the use of these, that the philosopher is enabled to speculate concerning classes of objects, with the same facility with which the savage or the peasant speculates concerning the *individuals* of which they are composed. The *technical* terms, in the different sciences, render the appropriate language of philosophy a still more convenient instrument of thought, than those languages which have originated from popular use; and in proportion as these technical terms improve in point of precision and comprehensiveness, they will contribute to render our intellectual progress more certain and more rapid. "While engaged," says Mr. Lavoisier, "in the composition of my elements of Chemistry, I perceived, better than I had ever done before, the truth of an observation of Condillac, that we think only through the medium of words; and that languages are true analytical methods. Algebra, which, of all our modes of expression, is the most simple, the most exact, and the best adapted to its purpose, is, at the same time, a language and an analytical method. The art of reasoning is nothing more than a *language well arranged*." The influence which these very enlightened and philosophical views have already had on the doctrines of chemistry, cannot fail to be known to most of my readers.

The foregoing remarks, in so far as they relate to the possibility of assisting our reasoning and inventive powers by new instrumental aids, may perhaps appear to be founded too much upon theory; but this objection cannot be made to the reasonings I have offered on the importance of the study of method.—To the justness of these, the whole history of science bears testimony, but more especially, the histories of Physics and of pure Geometry; which afford so remarkable an illustration of the general doctrine, as can scarcely fail to be satisfactory, even to those who are the most disposed to doubt the efficacy of art in directing the exertions of genius.

With respect to the former, it is sufficient to mention the wonderful effects which the writings of Lord Bacon have produced, in accelerating its progress. The philosophers, who flourished before his time, were, undoubtedly, not inferior to their successors, either in genius or industry: but their plan of investigation was erroneous; and their labors have produced only a chaos of fictions and absurdities. The illustrations which his works contain, of the method of induction, general as the terms are, in which they are expressed, have gradually turned the attention of the moderns to the rules of philosophizing; and have led the way to those important and sublime discoveries in physics, which reflect so much honor on the present age.

The rules of philosophizing, however, even in physics, have never yet been laid down with a sufficient degree of precision, minuteness, or method; nor have they ever been stated and illustrated in so clear and popular a manner, as to render them intelligible to the generality of readers. The truth, perhaps, is, that the greater part of physical inquirers have derived what knowledge of them they possess, rather from an attention to the excellent models of investigation which the writings of Newton exhibit, than from any of the speculations of Lord Bacon, or his commentators: and, indeed, such is the incapacity of most people for abstract reasoning, that I am inclined to think, even if the rules of inquiry were delivered in a perfectly complete and unexceptionable form, it might still be expedient to teach them to the majority of students, rather by examples, than in the form of general principles. But it does not therefore follow, that an attempt to illustrate and to methodize these rules would be useless; for it must be remembered, that, although an original and inventive genius, like that of Newton be sufficient to establish a standard for the imitation of his age, yet, that the genius of Newton himself was encouraged and led by the light of Bacon's philosophy.

The use which the ancient Greek geometers made of their *analysis* affords an additional illustration of the utility of method in guiding scientific invention. To *facilitate* the study of the species of investigation, they wrote no less than thirty-three preparatory books; and they considered an address in the practice of it, (or, as Marinus calls it, a δύναμις ἀναλυτικὴ,) as of much more value, than an extensive acquaintance with the principles of the science.* Indeed, it is well known to every one who is at all conversant with geometrical investigations, that although it may be possible for a person, without the assistance of the method of analysis, to stumble accidentally on a solution, or on a demonstration, yet is impossible for him to possess a just confidence in his own powers, or to carry on a regular plan of invention and discovery. It is well known, too, that an acquaintance with this method brings geometers much more nearly upon a level with each other, than they would be otherwise: not that it is possible, by any rules, to supersede, entirely, ingenuity and address; but because, in consequence of the uniformity of the plan on which the method proceeds, experience communicates a certain dexterity in the use of it, which must, in time, give to a very ordinary degree of sagacity a superiority on the whole, to the greatest natural ingenuity, unassisted by rule.†

To these observations, I believe I may add, that, after

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[*] Μεῖζον ἐστί τὸ δύναμιν ἀναλυτικὴν κτήσασθαι, τοῦ πολλὰς ἀποδείξεις τῶν ἐπὶ μέρους ἔχειν.

[†] "Mathematica multi sciunt, mathesin pauci. Aliud est enim nosse propositiones aliquot, et nonnullas ex iis obvias elicere, casu potius quàm certâ aliquâ discurrendi normâ; aliud scientiæ ipsius naturam ac indolem perspectam habere, in ejus se adyta penetrare, et ab universalibus instructum esse præceptis, quibus theoremata ac problemata innumera excogitandi, eademque demonstrandi facilitas comparetur. Ut enim pictorum vulgus prototypon sæpe sæpius exprimendo, quendam pingendi usum, nullam verò pictoriquæ artis quam optica suggerit scientiam adquirit, ita multi, lectis Euclidis et aliorum geometrarum libris, eorum imitatione fingere propositiones aliquas ac demonstrare solent, ipsam tamen secretissimam difficiliorum theorematum ac problematum solvendi methodum prorsus ignorant."—*Joannis de la Faille Theoremata de Centro Gravitatis, in præfat.*—Antwerpiæ, 1632.

all that was done by the Greek philosophers to facilitate mathematical invention, many rules still remain to be suggested, which might be of important use, even in pure geometry. A variety of such occur to every experienced mathematician in the course of his inquiries, although, perhaps, he may not be at the trouble to state them to himself in words; and it would plainly have saved him much expense of time and thought, beside enabling him to conduct his researches on a more regular plan, if he had been taught them systematically at the commencement of his studies. The more varied, abstruse, and general investigations of the moderns, stand in need, in a much greater degree, of the guidance of philosophical principles; not only for enabling us to conduct, with skill, our particular researches, but for directing us to the different methods of reasoning, to which we ought to have recourse on different occasions. A collection of such rules would form, what might be called with propriety, the logic of mathematics; and would probably contribute greatly to the advancement of all those branches of knowledge, to which mathematical learning is subservient.

The observations which have been now made, on the importance of method in conducting physical and mathematical researches, particularly those which relate to the last of these subjects, will not apply literally to our inquiries in metaphysics, morals, or politics; because, in these sciences, our reasonings always consist of a comparatively small number of intermediate steps, and the obstacles which retard our progress, do not, as in mathematics, arise from the difficulty of finding media of comparison among our ideas. Not that these obstacles are less real or more easily surmounted: on the contrary, it seems to require a still rarer combination of talents to surmount them; for how small is the number of individuals who are qualified to think justly on metaphysical, moral, or political subjects, in comparison of those who may be trained by practice to follow the longest processes of mathematical reasoning. From what these obstacles arise, I shall not inquire particularly at present. Some of the more important of them may be referred to the imperfections of language; to the difficulty of annexing precise and steady ideas to our words; to the difficulty, in some cases, of conceiving the subjects of our reasoning; and, in others, of discovering, and keeping in view, all the various circumstances upon which our judgment ought to proceed; and, above all, to the prejudices which early impressions and associations create, to warp our opinions.—To illustrate these sources of error, in the different sciences which are liable to be affected by them, and to point out the most effectual means for guarding against them, would form another very interesting article in a philosophical system of logic.

The method of communicating to others the principles of the different sciences, has been as much neglected by the writers on logic, as the rules of investigation and discovery; and yet, there is certainly no undertaking whatever, in which their assistance is more indispensably requisite. The first principles of all the sciences are intimately connected with the philosophy of the human mind; and it is the province of the logician to state these in such a manner as to lay a solid foundation for the superstructures which others are to rear.—It is in stating such principles, accordingly, that elementary writers are chiefly apt to fail. How unsatisfactory, for example, are the introductory chapters in most systems of natural philosophy! not in consequence of any defect of physical or of mathematical knowledge in their authors, but in consequence of a want of attention to the laws of human thought, and to the general rules of just reasoning. The same remark may be extended to the form, in which the elementary principles of many of the other sciences are commonly exhibited; and, if I am not mistaken, this want of order among the first ideas which they present to the mind, is a more powerful obstacle to the progress of knowledge, than is generally imagined.

I shall only observe farther, with respect to the utility of the philosophy of mind, that, as there are some arts in which we not only employ the intellectual faculties as instruments, but operate on the mind as a subject, so, to those individuals who aim at excellence in such pursuits, the studies I have now been recommending are, in a more peculiar manner, interesting and important. In poetry, in painting, in eloquence, and in all the other fine arts, our success depends on the skill with which we are able to adapt the efforts of our genius to the human frame; and it is only on a philosophical analysis of the mind, that a solid foundation can be laid for their farther improvement. Man, too, is the subject on which the practical moralist and the enlightened statesman have to operate. Of the former, it is the professed object to engage the attention of individuals to their own best interest, and to allure them to virtue and happiness, by every consideration, that can influence the understanding, the imagination, or the heart. To the latter, is assigned the sublimer office of seconding the benevolent intentions of Providence in the administration of human affairs; to diffuse as widely and equally as possible, among his fellow-citizens, the advantages of the social union; and, by a careful study of the constitution of man, and of the circumstances in which he is placed, to modify the political order, in such a manner as may allow free scope and operation to those principles of intellectual and moral improvement, which nature has implanted in our species.

In all these cases, I am very sensible, that the utility of systematical rules has been called in question by philosophers of note, and that many plausible arguments in support of their opinion, may be derived from the small number of individuals who have been regularly trained to eminence in the arts, in comparison of those who have been guided merely by untutored genius, and the example of their predecessors. I know, too, that it may be urged with truth, that rules have, in some cases, done more harm than good, and have misled, instead of directing, the natural exertions of the mind. But, in all such instances, in which philosophical principles have failed in producing their intended effect, I will venture to assert, that they have done so, either in consequence of errors, which were accidentally blended with them, or, in consequence of their possessing only that slight and partial influence over the genius, which enabled them to derange its previously acquired habits, without regulating its operations, upon a systematical plan, with steadiness and efficacy. In all the arts of life, whether trifling or important, there is a certain degree of skill, which may be attained by our untutored powers, aided by imitation; and this skill, instead of being perfected by rules, may, by means of them, be diminished or destroyed, if these rules are partially and imperfectly apprehended, or even if they are not so familiarized to the understanding, as to influence its exertions uniformly and habitually. In the case of a musical performer, who has learnt his art merely by the ear, the first effects of systematical instruction are, I believe, always *unfavorable*. The effect is the same of the rules of elocution, when first communicated to one who has attained by his natural taste and good sense, a tolerable propriety in the art of reading. But it does not follow from this, that in either of these arts, rules are useless. It only follows, that, in order to unite ease and grace with correctness, and to preserve the felicities of original genius amidst those restraints which may give them an useful direction, it is necessary that the acquisitions of education should, by long and early habits, be rendered, in some measure, a second nature.—The same observations will be found to apply, with very slight alterations, to arts of more serious importance:—In the art of legislation, for example, there is a certain degree of skill, which may be acquired merely from the routine of business; and when once a politician has been formed, in this manner, among the details of office, a partial study of general principles will be much more likely to lead him astray, than to enlighten his conduct. But there is nevertheless a science of legislation, which the details of office, and the intrigues of popular assemblies, will never communicate; a science, of which the principles must be sought for in the constitution of human nature, and in the general laws which regulate the course of human affairs; and which, if ever, in consequence of the progress of reason, philosophy should be enabled to assume that ascendant in the government of the world, which has hitherto been maintained by accident, combined with the passions and caprices of a few leading individuals, may, perhaps, produce more perfect and happy forms of society, than have yet been realized in the history of mankind.

I have thus endeavoured to point out, and illustrate, a few of the most important purposes, to which the philosophy of the human mind is subservient. It will not, however, I flatter myself, be supposed by any of my readers, that I mean to attempt a systematical work on all, or any of the subjects I have now mentioned; the most limited of which would furnish matter for many volumes. What I have aimed at, has been, to give, in the first place, as distinct and complete an analysis as I could, of the principles, both intellectual and active, of our nature; and, in the second place, to illustrate, as I proceed, the application of these general laws of the human constitution, to the different classes of phenomena which result from them. In the selection of these phenomena, although I have sometimes been guided chiefly by the curiosity of the moment, or the accidental course of my own studies, yet I have had it in view, to vary as far as possible, the nature of my speculations, in order to show how numerous and different the applications are, of which this philosophy is susceptible. It will not, therefore, I hope, be objected to me, that I have been guilty of a blameable violation of unity in the plan of my work, till it be considered how far such a violation was useful for accomplishing the purposes for which I write. One species of unity, I am willing to believe, an attentive reader will be able to trace in it; I mean, that uniformity of thought and design, "which," as Butler well remarks, "we may always expect to meet with in the compositions of the same author, when he writes with simplicity, and in earnest."

ELEMENTS

OF THE

PHILOSOPHY OF THE HUMAN MIND.

CHAPTER FIRST.

OF THE POWERS OF EXTERNAL PERCEPTION.

SECTION I.

Of the Theories which have been formed by Philosophers, to explain the Manner in which the MIND perceives External Objects.

AMONG the various phenomena which the human mind presents to our view, there is none more calculated to excite our curiosity and our wonder, than the communication which is carried on between the sentient, thinking, and active principle within us, and the material objects with which we are surrounded. How little soever the bulk of mankind may be disposed to attend to such inquiries, there is scarcely a person to be found, who has not occasionally turned his thoughts to that mysterious influence, which the will possesses over the members of the body, and to those powers of perception, which seem to inform us, by a sort of inspiration, of the various changes which take place in the external universe. Of those who receive the advantages of a liberal education, there are perhaps few, who pass the period of childhood, without feeling their curiosity excited by this incomprehensible communication between mind and matter. For our own part, at least, I cannot recollect the date of my earliest speculations on the subject.

It is to the phenomena of perception alone, that I am to confine myself in the following essay; and even with respect to these, all that I propose is, to offer a few general remarks on such of the common mistakes concerning them, as may be most likely to mislead us in our future inquiries. Such of my readers as wish to consider them more in detail, will find ample satisfaction in the writings of Dr. Reid.

In considering the phenomena of perception, it is natural to suppose, that the attention of philosophers would be directed, in the first instance, to the sense of seeing. The variety of information and of enjoyment we receive by it, the rapidity with which this information and enjoyment are conveyed to us, and above all, the intercourse it enables us to maintain with the more distant part of the universe, cannot fail to give it, even in the apprehension of the most careless observer, a pre-eminence over all our other perceptive faculties. Hence it is, that the various theories, which have been formed to explain the operations of our senses, have a more immediate reference to that of seeing; and that the greater part of the metaphysical language, concerning perception in general, appears evidently, from its etymology, to have been suggested by the phenomena of vision. Even when applied to this sense, indeed, it can at most amuse the fancy, without conveying any precise knowledge; but, when applied to the other senses, it is altogether absurd and unintelligible.

It would be tedious and useless to consider particularly the different hypotheses, which have been advanced upon this subject. To all of them, I apprehend, the two following remarks will be found applicable: First, that, in the formation of them, their authors have been influenced by some general maxims of philosophizing, borrowed from physics; and secondly, that they have been influenced by an indistinct, but deep-rooted, conviction of the immateriality of the soul; which, although not precise enough to point out to them the absurdity of attempting to illustrate its operations by the analogy of matter, was yet sufficiently strong, to induce them to keep the absurdity of their theories as far as possible out of view, by allusions to those physical facts, in which the distinctive properties of matter are the least grossly and palpably exposed to our observation. To the former of these circumstances is to be ascribed the general principle, upon which all the known theories of perception proceed; that, in order to explain the intercourse between the mind and distant objects, it is necessary to suppose the existence of something intermediate, by which its perceptions are produced; to the latter, the various metaphorical expressions of *ideas*, *species*, *forms*, *shadows*, *phantasms*, *images*; which, while they amused the fancy with some remote analogies to the objects of our senses, did not directly revolt our reason, by presenting to us any of the tangible qualities of body.

"It was the doctrine of Aristotle," says Dr. Reid, "that as our senses cannot receive external material objects themselves, they receive their species; that is, their images or forms, without the matter; as wax receives the form of the seal without any of the matter of it. These images or forms, impressed upon the senses, are called *sensible species*; and are the objects only of the sensitive part of the mind; but by various internal powers, they are retained, refined, and spiritualized, so as to become objects of memory and imagination; and, at last, of pure intellection. When they are objects of memory and of imagination, they get the name of *phantasms*. When, by farther refinement, and being stripped of their particularities, they become objects of science, they are called *intelligible species*; so that every immediate object, whether of sense, of memory, of imagination, or of reasoning, must be some phantasm, or species, in the mind itself.

"The followers of Aristotle, especially the schoolmen, made great additions to this theory; which the author himself mentions very briefly, and with an appearance of reserve. They entered into large disquisitions with regard to the sensible species, what kind of things they are; how they are sent forth by the object, and enter by the organs of the senses; how they are preserved, and refined by various agents, called internal senses, concerning the number and offices of which they had many controversies."*

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* Essays on the Intellectual Powers of Man, p. 25.

The Platonists, too, although they denied the great doctrine of the Peripatetics, that all the objects of human understanding enter at first by the senses; and maintained, that there exist eternal and immutable ideas, which were prior to the objects of sense, and about which all science was employed; yet appear to have agreed with them in their notions concerning the mode in which external objects are perceived. This, Dr. Reid infers, partly from the silence of Aristotle about any difference between himself and his master upon this point, and partly from a passage in the seventh book of Plato's Republic; in which he compares the process of the mind in perception, to that of a person in a cave, who sees not external objects themselves, but only their shadows.*

"Two thousand years after Plato," continues Dr. Reid, "Mr. Locke, who studied the operations of the human mind so much, and with so great success, represents our manner of perceiving external objects, by a similitude very much resembling that of the cave.—'Methinks,' says he, 'the understanding is not much unlike a closet, wholly shut from light, with only some little opening left, to let in external visible resemblances or ideas of things without. Would the pictures coming into such a dark room but stay there, and lie so orderly as to be found upon occasion, it would very much resemble the understanding of a man in reference to all objects of sight, and the ideas of them.'†

"Plato's subterranean cave, and Mr. Locke's dark closet, may be applied with ease to all the systems of perceptions that have been invented: for they all suppose, that we perceive not external objects immediately, and that the immediate objects of perception are only certain shadows of the external objects. Those shadows, or images, which we immediately perceive, were by the ancients called *species*, *forms*, *phantasms*. Since the time of Des Cartes, they have commonly been called *ideas*;‡ and, by Mr. Hume, *impressions*. But all philosophers, from Plato to Mr. Hume, agree in this, that we do not perceive external objects immediately; and that the immediate object of perception must be some image present to the mind." On the whole, Dr. Reid remarks, "that in their sentiments concerning perception, there appears a uniformity, which rarely occurs upon subjects of so abstruse a nature."*

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* Essays on the Intellectual Powers of Man, p. 99.
† Locke on Human Understanding, book ii. chap. 11, § 17.
‡ See Note (B.)

The very short and imperfect view we have now taken of the common theories of perception, is almost sufficient, without any commentary, to establish the truth of the two general observations formerly made; for they all evidently proceed on a supposition, suggested by the phenomena of physics, that there must of necessity exist some medium of communication between the objects of perception and the percipient mind, and they all indicate a secret conviction in their authors, of the essential distinction between mind and matter; which, although not rendered, by reflection, sufficiently precise and satisfactory, to show them the absurdity of attempting to explain the mode of their communication, had yet such a degree of influence on their speculations, as to induce them to exhibit their supposed medium under as mysterious and ambiguous a form as possible, in order that it might remain doubtful, to which of the two predicaments, of body or mind, they meant that it should be referred. By refining away the grosser qualities of matter; and by allusions to some of the most aerial and magical appearances it assumes, they endeavoured, as it were, to spiritualize the nature of their medium; while at the same time, all their language concerning it, implied such a reference to matter, as was necessary for furnishing a plausible foundation, for applying to it the received maxims of natural philosophy.

Another observation, too, which was formerly hinted at, is confirmed by the same historical review; that, in the order of inquiry, the phenomena of vision had first engaged the attention of philosophers; and had suggested to them the greater part of their language, with respect to perception in general; and that, in consequence of this circumstance, the common modes of expression on the subject, unphilosophical and fanciful at best, even when applied to the sense of seeing, are in the case of all the other senses, obviously unintelligible and self-contradictory.—"As to objects of sight," says Dr. Reid, "I understand what is meant by an image of their figure in the brain: but how shall we conceive an image of their color, where there is absolute darkness? And, as to all other objects of sense, except figure and color, I am unable to conceive what is meant by an image of them. Let any man say, what he means by an image of heat and cold, an image of hardness or softness, an image of sound, or smell, or taste. The word *image*, when applied to these objects of sense, has absolutely no meaning."—This palpable imperfection in the ideal theory, has plainly taken rise from the natural order in which the phenomena of perception present themselves to the curiosity.

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* Reid, p. 116, 117.

The mistakes, which have been so long current in the world, about this part of the human constitution, will, I hope, justify me for prosecuting the subject a little farther; in particular, for illustrating, at some length, the first of the two general remarks already referred to. This speculation I enter upon the more willingly, that it affords me an opportunity of stating some important principles with respect to the object and the limits of philosophical inquiry, to which I shall frequently have occasion to refer, in the course of the following disquisitions.

SECTION II.

Of certain natural Prejudices, which seem to have given rise to the common Theories of Perception.

It seems now to be pretty generally agreed among philosophers, that there is no instance in which we are able to perceive a necessary connexion between two successive events, or to comprehend in what manner the one proceeds from the other, as its cause. From experience, indeed, we learn, that there are many events which are constantly conjoined, so that the one invariably follows the other: but it is possible, for any thing we know to the contrary, that this connexion, though a constant one, as far as our observation has reached, may not be a necessary connexion; nay, it is possible, that there may be no necessary connexions among any of the phenomena we see: and, if there are any such connexions existing, we may rest assured that we shall never be able to discover them.*

I shall endeavour to show, in another part of this work, that the doctrine I have now stated does not lead to those skeptical conclusions, concerning the existence of a First Cause, which an author of great ingenuity has *attempted* to deduce from it.—At present, it is sufficient for my purpose to remark, that the word *cause* is used, both by philosophers and the vulgar, in two senses, which are widely different.—When it is said, that every change in nature indicates the operation of a cause, the word *cause* expresses something which is supposed to be necessarily connected with the change; and without which it could not have happened. This may be called the *metaphysical* meaning of the word; and such causes may be called *metaphysical* or *efficient causes.* In natural philosophy, however, when we speak of one thing being the cause of another, all that we mean is, that the two are constantly conjoined, so that when we see the one, we may expect the other. These conjunctions we learn from experience alone; and without an acquaintance with them, we could not accommodate our conduct to the established course of nature.—The causes which are the objects of our investigation in natural philosophy, may, for the sake of distinction, be called *physical causes.*

I am very ready to acknowledge, that this doctrine, concerning the object of natural philosophy, is not altogether agreeable to popular prejudices. When a man, unaccustomed to metaphysical speculations, is told, for the first time, that the science of physics gives us no information concerning the efficient causes of the phenomena about which it is employed, he feels some degree of surprise and mortification. The natural bias of the mind is surely to conceive physical events as somehow linked together, and material substances, as possessed of certain powers and virtues, which fit them to produce particular effects. That we have no reason to believe this to be the case, has been shown in a very particular manner by Mr. Hume, and by other writers, and must, indeed, appear evident to every person, on a moment's reflection. It is a curious question, What gives rise to prejudice?

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* See Note (C.)

In stating the argument for the existence of the Deity, several modern philosophers have been at pains to illustrate that law of our nature, which leads us to refer every change we perceive in the universe, to the operation of an efficient cause.*—This reference is not the result of reasoning, but necessarily accompanies the perception, so as to render it impossible for us to see the change, without feeling a conviction of the operation of some cause by which it was produced; much in the same manner in which we find it to be impossible to conceive a sensation, without being impressed with a belief of the existence of a sentient being. Hence, I apprehend, it is, that when we see two events constantly conjoined, we are led to associate the idea of causation, or efficiency, with the former, and to refer to it that power or energy by which the change was produced; in consequence of which association, we come to consider philosophy as the knowledge of efficient causes, and lose sight of the operation of mind in producing the phenomena of nature.—It is by an association somewhat similar, that we connect our sensations of color with the primary qualities of body. A moment's reflection must satisfy any one, that the sensation of color can only reside in a mind; and yet our natural bias is surely to connect color with extension and figure, and to conceive *white*, *blue*, and *yellow*, as something spread over the surfaces of bodies. In the same way, we are led to associate with inanimate matter, the ideas of *power*, *force*, *energy* and *causation*, which are all attributes of mind, and can exist in a mind only.

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* See, in particular, Dr. Reid's Essays on the Intellectual Powers of Man.

The bias of our nature is strengthened by another association. Our language, with respect to cause and effect, is borrowed by analogy from material objects. Some of these we see scattered about us, without any connexion between them, so that one of them may be removed from its place, without disturbing the rest. We can, however, by means of some material *vinculum*, connect two or more objects together; so that whenever the one is moved, the others shall follow. In like manner, we see some events, which occasionally follow one another, and which are occasionally disjoined: we see others, where the succession is constant and invariable. The former we conceive to be analogous to objects which are loose, and unconnected with each other, and whose contiguity in place, is owing merely to accidental position; the others to objects, which are tied together by a material vinculum. Hence we transfer to such events the same language which we apply to connected objects. We speak of a connexion between two events, and of a chain of causes and effects.*

That this language is merely analogical, and that we know nothing of physical events, but the laws which regulate their succession, must, I think, appear very obvious to every person who takes the trouble to reflect on the subject: and yet it is certain, that it has misled the greater part of philosophers, and has had a surprising influence on the systems, which they have formed in very different departments of science.

A few remarks on some of the mistaken conclusions, to which the vulgar notions concerning the connexions among physical events have given rise, in natural philosophy, will illustrate clearly the origin of the common theories of perception; and will, at the same time, satisfy the reader, with respect to the train of thought which suggested the foregoing observations.

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* See Note (D.)

The maxim, that nothing can act but where it is, and when it is, has always been admitted, with respect to metaphysical or efficient causes. "Whatever objects," says Mr. Hume, "are considered as causes or effects, are contiguous; and nothing can operate in a time or place, which is ever so little removed from those of its existence." "We may therefore," he adds, "consider the relation of contiguity as essential to that of causation."—But although this maxim should be admitted, with respect to causes which are efficient, and which, as such, are necessarily connected with their effects, there is surely no good reason for extending it to physical causes, of which we know nothing, but that they are the constant forerunners and signs of certain natural events. It may, indeed, be improper, according to this doctrine, to retain the expressions, *cause* and *effect*, in natural philosophy; but, as long as the present language upon the subject continues in use, the propriety of its application, in any particular instance, does not depend on the contiguity of the two events in place or time, but solely on this question, whether the one event be the constant and invariable forerunner of the other, so that it may be considered as its infallible sign?—Notwithstanding, however, the evidence of this conclusion, philosophers have in general proceeded upon a contrary supposition; and have discovered an unwillingness, even in physics, to call one event the cause of another, if the smallest interval of space or time existed between them. In the case of motion, communicated by impulse, they have no scruple to call the impulse the cause of the motion; but they will not admit that one body can be the cause of motion in another, placed at a distance from it, unless a connexion is carried on between them, by means of some intervening medium.

It is unnecessary for me, after what has already been said, to employ any arguments to prove, that the communication of motion by impulse is as unaccountable, as any other phenomenon in nature. Those philosophers who have attended at all to the subject, even they who have been the least skeptical with respect to cause and effect, and who have admitted a necessary connexion among physical events, have been forced to acknowledge, that they could not discover any necessary connexion between impulse and motion. Hence, some of them have been led to conclude, that the impulse only rouses the activity of the body, and that the subsequent motion is the effect of this activity, constantly exerted. "Motion," says one writer, "is action; and a continued motion implies a continued action." "The impulse is only the cause of the beginning of the motion: its continuance must be the effect of some other cause, which continues to act as long as the body continues to move." The attempt which another writer of great learning has made, to revive the ancient theory of mind, has arisen from a similar view of the subject before us. He could discover no *necessary* connexion between impulse and motion; and concluded, that the impulse was only the *occasion* of the motion, the beginning and continuance of which he ascribed to the continued agency of the mind with which the body is animated.

Although, however, it be obvious, on a moment's consideration, that we are as ignorant of the connexion between impulse and motion, as of the connexion between fire and any of the effects we see it produce, philosophers, in every age, seem to have considered the production of motion by impulse, as almost the only physical fact which stood in need of no explanation. When we see one body attract another at a distance, our curiosity is roused, and we inquire how the connexion is carried on between them. But when we see a body begin to move in consequence of an impulse which another has given it, we inquire no farther: on the contrary, we think a fact sufficiently accounted for, if it can be shown to be a case of impulse. This distinction, between motion produced by impulse, and the other phenomena of nature, we are led, in a great measure, to make, by confounding together efficient and physical causes; and by applying to the latter, maxims which have properly a reference only to the former.—Another circumstance, likewise, has probably considerable influence: that, as it is by means of impulse alone, that we ourselves have a power of moving external objects, this fact is more familiar to us from our infancy than any other, and strikes us as a fact which is necessary, and which could not have happened otherwise. Some writers have even gone so far as to pretend that, although the experiment had never been made, the communication of motion by impulse, might have been predicted, by reasoning *a priori*.*

From the following passage, in one of Sir Isaac Newton's letters to Dr. Bentley, it appears that he supposed the communication of motion, by impulse, to be a phenomenon much more explicable, than that a connexion should subsist between two bodies placed at a distance from each other, without any intervening medium. "It is inconceivable," says he, "that inanimate brute matter should, without the mediation of something else which is not material, operate upon, and affect other matter, without mutual contact; as it must do, if gravitation, in the sense of Epicurus, be essential and inherent in it. And this is one reason why I desired that you would not ascribe innate gravity to me. That gravity should be innate, inherent, and essential to matter, so that one body may act on another, through a vacuum, without the mediation of any thing else, by and through which their action and force may be conveyed from one to another, is to me so great an absurdity, that I believe no man who has, in philosophical matters, a competent faculty of thinking, can ever fall into it."

With this passage I so far agree, as to allow that it is impossible to conceive in what manner one body acts on another at a distance, through a vacuum. But I cannot admit that it removes the difficulty to suppose, that the two bodies are in actual contact. That one body may be the efficient cause of the motion of another body placed at a distance from it, I do by no means assert; but only, that we have as good reason to believe that this may be possible, as to believe that any one natural event is the efficient cause of another.

I have been led into this very long disquisition concerning efficient and physical causes, in order to point out the origin of the common theories of perception; all of which appear to me to have taken rise from the same prejudice which I have already remarked to have had so extensive an influence upon the speculations of natural philosophers.

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* See an Answer to Lord Kaimes's Essay on Motion; by John Stewart, M. D.

That, in the case of the perception of distant objects, we are naturally inclined to suspect, either something to be emitted from the object to the organ of sense, or some medium to intervene between the object and organ, by means of which the former may communicate an impulse to the latter; appears from the common modes of expression on the subject, which are to be found in all languages. In our own, for example, we frequently hear the vulgar speak, of light striking the eye, not in consequence of any philosophical theory they have been taught, but of their own crude and undirected speculations. Perhaps there are few men among those who have attended at all to the history of their own thoughts, who will not recollect the influence of these ideas, at a period of life long prior to the date of their philosophical studies. Nothing, indeed, can be conceived more simple and natural than their origin. When an object is placed in a certain situation with respect to a particular organ of the body, a perception arises in the mind: when the object is removed, the perception ceases. *Hence we are led to apprehend some connexion between the object and the perception; and as we are accustomed to believe, that matter produces its effects by impulse, we conclude that there must be some material medium intervening between the object and organ, by means of which the impulse is communicated from the one to the other.—That this is really the case, I do not mean to dispute. I think, however, it is evident, that the existence of such a medium does not in any case appear *a priori*; and yet the natural prejudices of men have given rise to an universal belief of it, long before they were able to produce any good arguments in support of their opinion.

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* Tum porrò varios rerum sentimus odores,
Nec tamen ad nareis venienteis cernimus unquam:
Nec calidos æstus tuimur, nec frigora quimus
Usurpare oculis, nec voces cernere suemus;
Quæ tamen omnia corporeâ constare necesse 'st
Naturâ; quoniam sensus impellere possunt.
Lucret. lib. i. v. 299.

Nor is it only to account for the connexion between the object and the organ of sense, that philosophers have had recourse to the theory of impulse. They have imagined, that the impression on the organ of sense is communicated to the mind, in a similar manner. As one body produces a change in the state of another by impulse, so it has been supposed, that the external object produces perception, (which is a change in the state of the mind,) first, by some material impression made on the organ of sense; and, secondly, by some material impression communicated from the organ to the mind along the nerves and brain. These suppositions, indeed, as I had occasion already to hint, were, in the ancient theories of perception, rather implied than expressed: but by modern philosophers they have been stated in the form of explicit propositions. "As to the manner," says Mr. Locke, "in which bodies produce ideas in us, it is manifestly by impulse, the only way which we can conceive bodies to operate in."[*] And Sir Isaac Newton, although he does not speak of an *impulse* made on the mind, plainly proceeded on the principle that, as matter can only move matter by impulse, so no connexion could be carried on between matter and mind, unless the mind were *present* (as he expresses it) to the matter from which the last impression is communicated. "Is not," says he, "the sensorium of animals, the place where the sentient substance is present; and to which the sensible species of things are brought, through the nerves and brain, that there they may be perceived by the mind present in that place?" Dr. Clarke has expressed the same idea still more confidently, in the following passage of one of his letters to Leibnitz. "Without being present[†] to the images of the things perceived, the soul

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[*] Essay on Human Understanding, book ii. chap. viii. § 11.

[†] This phrase of "the soul *being present* to the images of external objects," has been used by many philosophers, since the time of Des Cartes; evidently from a desire to avoid the absurdity of supposing, that images of extension and figure can exist in an unextended mind.

"Quæris," says Des Cartes himself, in replying to the objections of one of his could not possibly perceive them. A living substance can only there perceive, where it is present. Nothing can any more act or be acted upon, *where* it is not present, than it can *when* it is not." "How body acts upon mind, or mind upon body," says Dr. Porterfield,[*] "I know not; but this I am very certain of, that nothing can act, or be acted upon, where it is not; and therefore our mind can never perceive any thing but its own proper modifications, and the various states of the sensorium, to which it is present: so that it is not the external sun and moon, which are in the heavens, which our mind perceives, but only their image or representation, impressed upon the sensorium. How the soul of a seeing man sees these images, or how it receives those ideas, from such agitations in the sensorium, I know not; but I am sure it can never perceive the external bodies themselves, to which it is not present."

[†] The same train of thinking, which had led these philosophers to suppose, that external objects are perceived by means of species proceeding from the object to the mind, or by means of some material impression made on the mind by the brain, has suggested to a late writer a very different theory; that the mind, when it perceives an external object, quits the body, and is present to the object of perception. "The mind," says the learned author of Ancient Metaphysics, "is not where the body is, when it perceives what is distant from the body, either in time or place, because nothing can act,

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antagonists, "quomodo existimem in me subjecto inextenso recipi posse speciem, ideamve corporis quod extensum est. Respondeo, nullam speciem corpoream in mente recipi, sed puram intellectionem tam rei corporeæ quàm incorporeæ fieri absque ullâ specie corporeâ: ad imaginationem verò quæ non nisi de rebus corporeis esse potest, opus quidem esse specie quæ sit verum corpus, et *ad quam mens se applicet*, sed non quæ in mente recipiatur."—It appears, therefore, that this philosopher supposed his images, or ideas, to exist in the *brain* and not in the *mind*. Mr. Locke's expressions sometimes imply the one supposition, and sometimes the other.

[*] See his Treatise on the Eye, vol. ii. p. 359.

[†] "The slightest philosophy," says Mr. Hume, "teaches us, that nothing can ever be present to the mind, but an image, or perception: and that the senses are only the inlets, through which these images are conveyed; without being able to produce any immediate intercourse between the mind and the object. The table which we see, seems to diminish as we remove farther from it: but the real table, which exists independent of us, suffers no alteration; it was therefore, nothing but its image which was present to the mind. These," he adds, "are the obvious dictates of reason." *Essay on the Academical or Skeptical Philosophy*.

but when, and where it is. Now, the mind acts when it perceives. The mind, therefore, of every animal who has memory or imagination, acts, and by consequence exists, when and where the body is not; for it perceives objects distant from the body both in time and place."* Indeed if we take for granted, that in perception the mind acts upon the object, or the object upon the mind, and, at the same time, admit the truth of the maxim, that "nothing can act but where it is," we must, of necessity, conclude, either that objects are perceived in a way similar to what is supposed in the ideal theory, or that, in every act of perception, the soul quits the body, and is present to the object perceived. And accordingly, this alternative is expressly stated by Malebranche; who differs, however, from the writer last quoted, in the choice which he makes of his hypothesis; and even rests his proof of its truth on the improbability of the other opinion. "I suppose," says he, "that every one will grant, that we perceive not external objects immediately, and of themselves. We see the sun, the stars, and an infinity of objects without us; and it is not at all likely that, upon such occasions, the soul sallies out of the body, in order to be present to the objects perceived. She sees them not therefore by themselves; and the immediate object of the mind is not the thing perceived, but something which is intimately united to the soul; and it is that which I call an idea: so that by the word *idea*, I understand nothing else here but that which is nearest to the mind when we perceive any object.—It ought to be carefully observed, that in order to the mind's perceiving any object, it is absolutely necessary that the idea of that object be actually present to it. Of this it is not possible to doubt. The things which the soul perceives are of two kinds. They are either in the soul, or they are without the soul. Those that are in the soul, are its own thoughts; that is to say, all its different modifications. The soul has no need of ideas for perceiving these things. But with regard to things without the soul, we cannot perceive them but by means of ideas."

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* Ant. Met. vol. ii. p. 306.

To these quotations, I shall add another, which contains the opinion of Buffon upon the subject. As I do not understand it so completely, as to be able to translate it in a manner intelligible to myself, I shall transcribe it in the words of the author.

"L'âme s'unit intimement à tel objet qu'il lui plait; la distance, la grandeur, la figure, rien ne peut nuire à cette union lorsque l'âme la veut: elle se fait, et se fait en un instant .... la volonté n'est-elle donc qu'un mouvement corporel, et la contemplation un simple attouchement? Comment cet attouchement pourroit-il se faire sur un objet éloigné, sur un sujet abstrait? Comment pourroit-il s'opérer en un instant indivisible? A-t-on jamais conçu du mouvement, sans qu'il y eut de l'espace et du tems? La volonté, si c'est un mouvement, n'est donc pas un mouvement matériel, et si l'union de l'âme à son objet est un attonchment, unco ntact, cet attouchement ne se fait-il pas au loin? ce contact n'est il pas une pénétration?"

All these theories appear to me to have taken their rise, first, from an inattention to the proper object of philosophy, and an application of the same general maxims to physical and to efficient causes; and, secondly, from an apprehension, that we understand the connexion between impulse and motion, better than any other physical fact. From the detail which I have given, it appears how extensive an influence this prejudice has had on the inquiries both of natural philosophers and of metaphysicians.

In the foregoing reasonings, I have taken for granted, that motion may be produced by impulse; and have contented myself with asserting, that this fact is not more explicable, than the motions which the Newtonians refer to gravitation; or than the intercourse which is carried on between the mind and external objects in the case of perception. The truth, however, is, that some of the ablest philosophers in Europe are now satisfied, not only that there is no evidence of motion being in any case produced by the actual contact of two bodies; but that very strong proofs may be given, of the absolute impossibility of such a supposition: and hence they have been led to conclude, that all the effects, which are commonly referred to impulse, arise from a power of repulsion, extending to a small and imperceptible distance round every element of matter. If this doctrine shall be confirmed by future speculations in physics, it must appear to be a curious circumstance in the history of science, that philosophers have been so long occupied in attempting to trace all the phenomena of matter, and even some of the phenomena of mind, to a general fact, which, upon an accurate examination, is found to have no existence.—I do not make this observation with a view to depreciate the labors of these philosophers; for although the system of Boscovich were completely established, it would not diminish, in the smallest degree, the value of those physical inquiries, which have proceeded on the common hypothesis, with respect to impulse. The laws which regulate the communication of motion, in the case of apparent contact, are the most general facts we observe among the terrestrial phenomena; and they are, of all physical events, those which are the most familiar to us from our earliest infancy. It was therefore not only natural but proper, that philosophers should begin their physical inquiries, with attempting to refer to these, (which are the most general laws of nature, exposed to the examination of our senses,) the particular appearances they wished to explain. And, if ever the theory of Boscovich should be completely established, it will have no other effect than to resolve these laws into some principle still more general, without affecting the solidity of the common doctrine, so far as it goes.

SECTION III.

Of Dr. Reid's Speculations on the Subject of Perception.

It was chiefly in consequence of the skeptical conclusions which Bishop Berkeley and Mr. Hume had deduced from the ancient theories of perception, that Dr. Reid was led to call them in question; and he appears to me to have shown, in the most satisfactory manner, not only that they are perfectly hypothetical, but that the suppositions they involve, are absurd and impossible. His reasonings, on this part of our constitution, undoubtedly form the most important accession which the philosophy of the human mind has received since the time of Mr. Locke.

But although Dr. Reid has been at much pains to overturn the old ideal system, he has not ventured to substitute any hypothesis of his own in its place. And, indeed, he was too well acquainted with the limits prescribed to our philosophical inquiries, to think of indulging his curiosity in such unprofitable speculations. All, therefore, that he is to be understood as aiming at, in his inquiries concerning our perceptive powers, is, to give a precise state of the fact, divested of all theoretical expressions; in order to prevent philosophers from imposing on themselves any longer, by words without meaning, and to extort from them an acknowledgment, that, with respect to the process of nature in perception, they are no less ignorant than the vulgar.

According to this view of Dr. Reid's reasonings on the subject of perception, the purpose to which they are subservient may appear to some to be of no very considerable importance; but the truth is, that one of the most valuable effects of genuine philosophy, is to remind us of the limited powers of the human understanding, and to revive those natural feelings of wonder and admiration at the spectacle of the universe, which are apt to languish in consequence of long familiarity. The most profound discoveries which are placed within the reach of our researches lead to a confession of human ignorance; for, while they flatter the pride of man, and increase his power, by enabling him to trace the simple and beautiful laws by which physical events are regulated, they call his attention, at the same time, to those general and ultimate facts which bound the narrow circle of his knowledge; and which, by evincing to him the operation of powers, whose nature must for ever remain unknown, serve to remind him of the insufficiency of his faculties to penetrate the secrets of the universe.

Wherever we direct our inquiries; whether to the anatomy and physiology of animals, to the growth of vegetables, to the chemical attractions and repulsions, or to the motions of the heavenly bodies, we perpetually perceive the effects of powers which cannot belong to matter. To a certain length we are able to proceed; but in every research, we meet with a line, which no industry nor ingenuity can pass. It is a line too, which is marked with sufficient distinctness, and which no man now thinks of passing, who has just views of the nature and object of philosophy. It forms the separation between that field which falls under the survey of the physical inquirer, and that unknown region, of which, though it was necessary that we should be assured of the existence, in order to lay a foundation for the doctrines of natural theology, it hath not pleased the Author of the universe to reveal to us the wonders, in this infant state of our being. It was, in fact, chiefly by tracing out this line, that Lord Bacon did so much service to science.

Beside this effect, which is common to all our philosophical pursuits, of impressing the mind with a sense of that mysterious agency, or efficiency, into which general laws must be resolved, they have a tendency, in many cases, to counteract the influence of habit, in weakening those emotions of wonder and of curiosity, which the appearances of nature are so admirably fitted to excite. For this purpose, it is necessary, either to lead the attention to facts which are calculated to strike by their novelty, or to present familiar appearances in a new light: and such are the obvious effects of philosophical inquiries; sometimes extending our views to objects which are removed from vulgar observation, and sometimes correcting our first apprehensions with respect to ordinary events.—The communication of motion by impulse (as I already hinted) is as unaccountable as any phenomenon we know; and yet, most men are disposed to consider it as a fact which does not result from will, but from necessity. To such men, it may be useful to direct their attention to the universal law of gravitation; which, although not more wonderful in itself, than the common effects of impulse, is more fitted, by its novelty, to awaken their attention, and to excite their curiosity. If the theory of Boscovich should ever be established on a satisfactory foundation, it would have this tendency in a still more remarkable degree, by teaching us that the communication of motion by impulse, (which we are apt to consider as a necessary truth,) has no existence whatever; and that every case in which it appears to our senses to take place, is a phenomenon no less inexplicable, than that principle of attraction which binds together the most remote parts of the universe.

If such, however, be the effects of our philosophical pursuits when successfully conducted, it must be confessed that the tendency of imperfect or erroneous theories is widely different. By a specious solution of insuperable difficulties, they so dazzle and bewilder the understanding, as, at once, to prevent us from advancing, with steadiness, towards the limit of human knowledge, and from perceiving the existence of a region beyond it, into which philosophy is not permitted to enter. In such cases, it is the business of genuine science to unmask the imposture, and to point out clearly, both to the learned and to the vulgar, what reason can, and what she cannot, accomplish. This, I apprehend, has been done, with respect to the history of our perceptions, in the most satisfactory manner, by Dr. Reid.—When a person little accustomed to metaphysical speculations is told, that, in the case of volition, there are certain invisible fluids, propagated from the mind to the organ which is moved; and that, in the case of perception, the existence and qualities of the external object are made known to us by means of species, or phantasms, or images, which are present to the mind in the sensorium; he is apt to conclude, that the intercourse between mind and matter is much less mysterious than he had supposed; and that, although these expressions may not convey to him any very distinct meaning, their import is perfectly understood by philosophers. It is now, I think, pretty generally acknowledged by physiologists, that the influence of the will over the body is a mystery which has never yet been unfolded; but, singular as it may appear, Dr. Reid was the first person who had courage to lay completely aside all the common hypothetical language concerning perception, and to exhibit the difficulty in all its magnitude, by a plain statement of the fact. To what then, it may be asked, does this statement amount?—Merely to this; that the mind is so formed, that certain impressions produced on our organs of sense, by external objects, are followed by correspondent sensations; and that these sensations, (which have no more resemblance to the qualities of matter, than the words of a language have to the things they denote,) are followed by a perception of the existence and qualities of the bodies by which the impressions are made; that all the steps of this process are equally incomprehensible; and that, for any thing we can prove to the contrary, the connexion between the sensation and the perception, as well as that between the impression and the sensation, may be both arbitrary: that it is therefore by no means impossible, that our sensations may be merely the occasions on which the correspondent perceptions are excited; and that, at any rate, the consideration of these sensations, which are attributes of mind, can throw no light on the manner in which we acquire our knowledge of the existence and qualities of body. From this view of the subject, it follows, that it is the external objects themselves, and not any species or images of these objects, that the mind perceives; and that, although, by the constitution of our nature, certain sensations are rendered the constant antecedent of our perceptions, yet it is just as difficult to explain how our perceptions are obtained by their means, as it would be, upon the supposition, that the mind were all at once inspired with them, without any concomitant sensations whatever.

These remarks are general, and apply to all our various perceptions; and they evidently strike at the root of all the common theories upon the subject. The laws, however, which regulate these perceptions, are different in the case of the different senses, and form a very curious object of philosophical inquiry.—Those, in particular, which regulate the acquired perceptions of sight, lead to some very interesting and important speculations; and, I think, have never yet been explained in a manner completely satisfactory. To treat of them in detail, does not fall under the plan of this work; but I shall have occasion to make a few remarks on them, in the chapter on Conception.

In opposition to what I have here observed on the importance of Dr. Reid's speculations concerning our perceptive powers, I am sensible it may be urged, that they amount merely to a negative discovery; and it is possible, that some may even be forward to remark, that it was unnecessary to employ so much labor and ingenuity as he has done, to overthrow an hypothesis of which a plain account would have been a sufficient refutation.—To such persons I would beg leave to suggest, that, although, in consequence of the juster views in pneumatology, which now begin to prevail, (chiefly, I believe, in consequence of Dr. Reid's writings,) the ideal system may appear to many readers unphilosophical and puerile; yet the case was very different when this author entered upon his inquiries: and I may even venture to add, that few positive discoveries, in the whole history of science, can be mentioned, which found a juster claim to literary reputation, than to have detected, so clearly and unanswerably, the fallacy of an hypothesis, which has descended to us from the earliest ages of philosophy; and which, in modern times, has not only served to Berkeley and Hume as the basis of their skeptical systems, but was adopted as an indisputable truth by Locke, by Clarke, and by Newton.

SECTION IV.

Of the Origin of our Knowledge.

The philosophers who endeavoured to explain the operations of the human mind by the theory of ideas, and who took for granted, that in every exertion of thought there exists in the mind some object distinct from the thinking substance, were naturally led to inquire whence these ideas derive their origin; in particular, whether they are conveyed to the mind from without by means of the senses, or form part of its original furniture?

With respect to this question, the opinions of the ancients were various; but as the influence of these opinions on the prevailing systems of the present age is not very considerable, it is not necessary, for any of the purposes I have in view in this work, to consider them particularly. The moderns, too, have been much divided on the subject; some holding with Des Cartes, that the mind is furnished with certain innate ideas; others, with Mr. Locke, that all our ideas may be traced from sensation and reflection; and many, (especially among the later metaphysicians in France,) that they may be all traced from sensation alone.

Of these theories, that of Mr. Locke deserves more particularly our attention; as it has served as the basis of most of the metaphysical systems which have appeared since his time; and as the difference between it and the theory which derives all our ideas from sensation alone, is rather apparent than real.

In order to convey a just notion of Mr. Locke's doctrine concerning the origin of our ideas, it is necessary to remark, that he refers to sensation, all the ideas which we are supposed to receive by the external senses; our ideas, for example, of colours, of sounds, of hardness, of extension, of motion; and, in short, of all the qualities and modes of matter; to reflection, the ideas of our own mental operations which we derive from consciousness; our ideas, for example, of memory, of imagination, of volition, of pleasure, and of pain. These two sources, according to him, furnish us with all our simple ideas; and the only power, which the mind possesses over them, is to perform certain operations, in the way of composition, abstraction, generalization, &c. on the materials which it thus collects in the course of its experience. The laudable desire of Mr. Locke, to introduce precision and perspicuity into metaphysical speculations, and his anxiety to guard the mind against error in general, naturally prepossessed him in favor of a doctrine, which, when compared with those of his predecessors, was intelligible and simple, and which, by suggesting a method, apparently easy and palpable, of analyzing our knowledge into its elementary principles, seemed to furnish an antidote against those prejudices which had been favored by the hypothesis of innate ideas. It is now a considerable time since this fundamental principle of Mr. Locke's system began to lose its authority in England; and the skeptical conclusions, which it had been employed to support by some later writers, furnished its opponents with very plausible arguments against it. The late learned Mr. Harris, in particular, frequently mentions this doctrine of Mr. Locke, and always in terms of high indignation. "Mark," says he, in one passage, "the order of things according to the account of our later metaphysicians. First comes that huge body, the sensible world. Then this, and its attributes, beget sensible ideas. Then, out of sensible ideas, by a kind of lopping and pruning, are made ideas intelligible, whether specific or general. Thus, should they admit that mind was coeval with body; yet, till the body gave it ideas and awakened its dormant powers, it could at best have been nothing more than a sort of dead capacity; for innate ideas it could not possibly have any." And in another passage: "For my own part, when I read the detail about sensation and reflection, and am taught the process at large how my ideas are all generated, I seem to view the human soul in the light of a crucible, where truths are produced by a kind of logical chemistry."

If Dr. Reid's reasonings on the subject of ideas be admitted, all these speculations with respect to their origin fall to the ground, and the question to which they relate, is reduced merely to a question of fact, concerning the occasions on which the mind is first led to form those simple notions into which our thoughts may be analyzed, and which may be considered as the principles, or elements of human knowledge. With respect to many of these notions, this inquiry involves no difficulty. No one, for example, can be at a loss to ascertain the occasions on which the notions of colors and sounds are first formed by the mind: for these notions are confined to individuals who are possessed of particular senses, and cannot, by any combination of words, be conveyed to those who never enjoyed the use of them. The history of our notions of extension and figure, (which may be suggested to the mind by the exercise either of sight or of touch,) is not altogether so obvious; and accordingly it has been the subject of various controversies. To trace the origin of these and of our other simple notions with respect to the qualities of matter, or, in other words, to describe the occasions on which, by the laws of our nature, they are suggested to the mind, is one of the leading objects of Dr. Reid's inquiry, in his analysis of our external senses; in which he carefully avoids every hypothesis with respect to the inexplicable phenomena of perception and of thought, and confines himself scrupulously to a literal statement of facts.—Similar inquiries to these may be proposed, concerning the occasions on which we form the notions of *time*, of *motion*, of *number*, of *causation*, and an infinite variety of others. Thus, it has been observed by different authors, that every perception of change suggests to the mind the notion of a *cause*, without which that change could not have happened. Dr. Reid remarks, that, without the faculty of memory, our perceptive powers could never have led us to form the idea of *motion*. I shall afterwards show, in the sequel of this work, that without the same faculty of memory, we never could have formed the notion of *time*; and that without the faculty of abstraction, we could not have formed the notion of *number*.—Such inquiries, with respect to the origin of our knowledge, are curious and important, and if conducted with judgment, they may lead to the most certain conclusions; as they aim at nothing more than to ascertain facts, which, although not obvious to superficial observers, may yet be discovered by patient investigation.

From the remarks which have been just made on our notions of time, of motion, and of number, it is evident, that the inquiry concerning the origin of human knowledge cannot possibly be discussed at the commencement of such a work as this; but that it must be resumed in different parts of it, as those faculties of the mind come under our view, with which the formation of our different simple notions is connected.

With respect to the general question, Whether all our knowledge may be ultimately traced from our sensations? I shall only observe at present, that the opinion we form concerning it is of much less consequence than is commonly supposed. That the mind cannot, without the grossest absurdity, be considered in the light of a receptacle which is gradually furnished from without, by materials introduced by the channel of the senses, nor in that of a *tabula rasa*, upon which copies or resemblances of things external are imprinted, I have already shown at sufficient length. Although, therefore, we should acquiesce in the conclusion, that, without our organs of sense, the mind must have remained destitute of knowledge, this concession could have no tendency whatever to favor the principles of materialism; as it implies nothing more, than that the impressions made on our senses by external objects, furnish the occasions on which the mind, by the laws of its constitution, is led to perceive the qualities of the material world, and to exert all the different modifications of thought of which it is capable.

From the very slight view of the subject, however, which has been already given, it is sufficiently evident, that this doctrine, which refers the origin of all our knowledge to the occasions furnished by sense, must be received with many limitations. That those ideas, which Mr. Locke calls ideas of reflection, (or, in other words, the notions which we form of the subjects of our own consciousness,) are not suggested to the mind immediately by the sensations arising from the use of our organs of perception, is granted on all hands; and, therefore, the amount of the doctrine now mentioned, is nothing more than this; that the first occasions on which our various intellectual faculties are exercised, are furnished by the impressions made on our organs of sense; and consequently that, without these impressions, it would have been impossible for us to arrive at the knowledge of our faculties. Agreeaoly to this explanation of the doctrine, it may undoubtedly be said with plausibility, (and, I am inclined to believe, with truth,) that the occasions on which all our notions are formed, are furnished either immediately or ultimately by sense; but, if I am not much mistaken, this is not the meaning which is commonly annexed to the doctrine, either by its advocates or their opponents. One thing at least is obvious, that, in this sense, it does not lead to those consequences which have interested one party of philosophers in its defence, and another in its refutation.

There is another very important consideration which deserves our attention in this argument: that, even on the supposition that certain impressions on our organs of sense are necessary to awaken the mind to a consciousness of its own existence, and to give rise to the exercise of its various faculties, yet all this might have happened, without our having any knowledge of the qualities, or even of the existence, of the material world. To facilitate the admission of this proposition, let us suppose a being formed in every other respect like man, but possessed of no senses, excepting those of hearing and smelling. I make choice of these two senses, because it is obvious, that by means of them alone we never could have arrived at the knowledge of the primary qualities of matter, or even of the existence of things external. All that we could possibly have inferred from our occasional sensations of smell and sound, would have been, that there existed some unknown cause by which they were produced.

Let us suppose then a particular sensation to be excited in the mind of such a being. The moment this happens, he must necessarily acquire the knowledge of two facts at once: that of the existence of *the sensation*, and that of *his own existence*, as a sentient being. After the sensation is at end, he can *remember* he felt it; he can *conceive* that he feels it again. If he has felt a variety of different sensations, he can compare them together in respect of the pleasure or the pain they have afforded him, and will naturally *desire* the return of the agreeable sensations, and be *afraid* of the return of those which were painful. If the sensations of smell and sound are both excited in his mind at the same time, he can *attend* to either of them he chooses, and withdraw his attention from the other, or he can withdraw his *attention* from both, and fix it on some sensation he has felt formerly. In this manner, he might be led, merely by sensations existing in his mind, and conveying to him no information concerning matter, to exercise many of his most important faculties; and amidst all these different modifications and operations of his mind, he would feel, with irresistible conviction, that they all belong to one and the same sentient and intelligent being; or, in other words, that they are all modifications and operations of himself.—I say nothing, at present, of the various simple notions, (or simple ideas, as they are commonly called,) which would arise in his mind; for example, the ideas of *number*, of *duration*, of *cause* and *effect*, of *personal identity;* all of which, though perfectly unlike his sensations, could not fail to be suggested by means of them. Such a being, then, might know all that we know of mind at present, and as his language would be appropriated to mind solely, and not borrowed by analogy from material phenomena, he would even possess important advantages over us in conducting the study of pneumatology.

From these observations it sufficiently appears, what is the real amount of the celebrated doctrine, which refers the origin of all our knowledge to our sensations; and that, even granting it to be true, (which, for my own part, I am disposed to do, in the sense in which I have now explained it,) it would by no means follow from it, that our notions of the operations of mind, nor even many of those notions which are commonly suggested to us, *in the first instance*, by the perception of external objects, are *necessarily subsequent* to our knowledge of the qualities, or even of the existence, of matter.

The remarks which I have offered on this doctrine will not appear superfluous to those who recollect that, although it has, for many years past, been a subject of controversy in England, it continues still to be implicitly adopted by the best philosophical writers in France; and that it has been employed by some of them to support the system of materialism, and by others to show, that the intellectual distinctions between man and brutes arise entirely from the differences in their animal organization, and in their powers of external perception.

CHAPTER SECOND.

OF ATTENTION.

When we are deeply engaged in conversation or occupied with any speculation that is interesting to the mind, the surrounding objects either do not produce in us the perceptions they are fitted to excite, or these perceptions are instantly forgotten. A clock, for example, may strike in the same room with us, without our being able, next moment, to recollect whether we heard it or not.

In these and similar cases, I believe, it is commonly taken for granted, that we really do not perceive the external object. From some analogous facts, however, I am inclined to suspect that this opinion is not well founded. A person who falls asleep at church, and is suddenly awaked, is unable to recollect the last words spoken by the preacher; or even to recollect that he was speaking at all. And yet that sleep does not suspend entirely the powers of perception, may be inferred from this, that if the preacher were to make a sudden pause in his discourse, every person in the congregation, who was asleep, would instantly awake. In this case, therefore, it appears, that a person may be conscious of a perception, without being able afterwards to recollect it.

Many other instances of the same general fact might be produced. When we read a book, (especially in a language which is not perfectly familiar to us,) we must perceive successively every different letter, and must afterwards combine these letters into syllables and words, before we comprehend the meaning of a sentence. This process, however, passes through the mind without leaving any trace in the memory.

It has been proved by optical writers, that, in perceiving the distances of visible objects from the eye, there is a judgment of the understanding antecedent to the perception. In some cases this judgment is founded on a variety of circumstances combined together; the conformation of the organ necessary for distinct vision; the inclination of the optic axes; the distinctness or indistinctness of the minute parts of the object; the distances of the intervening objects from each other, and from the eye; and, perhaps, on other circumstances besides these: and yet, in consequence of our familiarity with such processes from our earliest infancy, the perception seems to be instantaneous; and it requires much reasoning, to convince persons unaccustomed to philosophical speculations, that the fact is otherwise.

Another instance, of a still more familiar nature, may be of use for the farther illustration of the same subject. It is well known, that our thoughts do not succeed each other at random, but according to certain laws of association, which modern philosophers have been at much pains to investigate. It frequently, however, happens, particularly when the mind is animated by conversation, that it makes a sudden transition from one subject to another, which, at first view, appears to be very remote from it; and that it requires a considerable degree of reflection, to enable the person himself, by whom the transition was made, to ascertain what were the intermediate ideas. A curious instance of such a sudden transition is mentioned by Hobbes in his Leviathan.—"In a company," says he, "in which the conversation turned on the civil war, what could be conceived more impertinent, than for a person to ask abruptly, What was the value of a Roman denarius? On a little reflection, however, I was easily able to trace the train of thought which suggested the question: for the original subject of discourse naturally introduced the history of the King, and of the treachery of those who surrendered his person to his enemies; this again introduced the treachery of Judas Iscariot, and the sum of money which he received for his reward.—And all this train of ideas," says Hobbes, "passed through the mind of the speaker in a twinkling, in consequence of the velocity of thought." It is by no means improbable, that if the speaker himself had been interrogated about the connexion of ideas, which led him aside from the original topic of discourse, he would have found himself, at first, at a loss for an answer.

In the instances which have been last mentioned, we have also a proof, that a perception, or an idea, which passes through the mind, without leaving any trace in the memory, may yet serve to introduce other ideas connected with it by the laws of association. Other proofs of this important fact shall be mentioned afterwards.

When a perception or an idea passes through the mind, without our being able to recollect it next moment, the vulgar themselves ascribe our want of memory to a want of attention. Thus, in the instance already mentioned, of the clock, a person upon observing that the minute hand had just passed twelve, would naturally say, that he did not attend to the clock when it was striking. There seems, therefore, to be a certain effort of mind upon which, even in the judgment of the vulgar, memory in some measure depends; and which they distinguish by the name of Attention.

The connexion between attention and memory has been remarked by many authors. "Nec dubium est," says Quinctilian, speaking of memory, "quin plurimum in hac parte valeat mentis intentio, et velut acies luminum a prospectu rerum quas intuetur non aversa." The same observation has been made by Locke,* and by most of the writers on the subject of education.

But although the connexion between attention and memory has been frequently remarked in general terms, I do not recollect that the power of attention has been mentioned by any of the writers on pneumatology, in their enumeration of the faculties of the mind; † nor has it been considered by any one, so far as I know, as of sufficient importance to deserve a particular examination. Helvetius, indeed, in his very ingenious work, *De l'Esprit*, has entitled one of his chapters *De l'inegale capacite d'Attention;* but what he considers under this article, is chiefly that capacity of patient inquiry, (or, as he calls it, *une attention suivie*, (upon which philosophical genius seems in a great measure to depend. He has also remarked,* with the writers already mentioned, that the impression which any thing makes on the memory, depends much on the degree of attention we give to it; but he has taken no notice of that effort which is absolutely essential to the lowest degree of memory. It is this effort that I propose to consider at present;—not those different degrees of attention which imprint things more or less deeply on the mind, but that act or effort, without which we have no recollection or memory whatever.

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* "Memory depends much on attention and repetition." *Locke's Essay*, b. i. ch. x.

† Some important observations on the subject of attention occur in different parts of Dr. Reid's writings, particularly in his Essays on the Intellectual Powers of Man, p. 62; and in his Essays on the Active Powers of Man, p. 78, et seq.—To this ingenious author we are indebted for the remark, that attention to things external is properly called *observation;* and attention to the subjects of our consciousness, *reflection*. He has also explained the causes of the peculiar difficulties which accompany this last exertion of the mind, and which form the chief obstacles to the progress of pneumatology. I shall have occasion, in another part of this work, to treat of habits of inattention in general, and to suggest some practical hints with respect to the culture both of the powers of observation and

With respect to the nature of this effort, it is perhaps impossible for us to obtain much satisfaction. We often speak of greater and less degrees of attention; and, I believe, in these cases, conceive the mind (if I may use the expression) to exert itself with different degrees of energy, I am doubtful, however, if this expression conveys any distinct meaning. For my own part, I am inclined to suppose, (though I would by no means be understood to speak with confidence,) that it is essential to memory, that the perception or the idea, that we would wish to remember, should remain in the mind for a certain space of time, and should be contemplated by it exclusively of every thing else; and that attention consists partly (perhaps entirely) in the effort of the mind, to detain the idea or the perception, and to exclude the other objects that solicit its notice.

Notwithstanding, however, the difficulty of ascertaining, in what this act of the mind consists, every person

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reflection. The view which I propose to take of attention at present, is extremely limited; and is intended merely to comprehend such general principles as are necessary to prepare the reader for the chapters which are to follow.

* "C'est l'attention, plus ou moins grande, qui grave plus ou moins profondément les objects dans la mémoire."

must be satisfied of its reality from his own consciousness; and of its essential connexion with the power of memory. I have already mentioned several instances of ideas passing through the mind, without our being able to recollect them next moment. These instances were produced, merely to illustrate the meaning I annex to the word *attention;* and to recall to the recollection of the reader, a few striking cases, in which the possibility of our carrying on a process of thought, which we are unable to attend to at the time, or to remember afterwards, is acknowledged in the received systems of philosophy. I shall now mention some other phenomena, which appear to me to be very similar to these, and to be explicable in the same manner; although they have commonly been referred to very different principles.

The wonderful effect of practice in the formation of habits has been often and justly taken notice of as one of the most curious circumstances in the human constitution. A mechanical operation, for example, which we at first performed with the utmost difficulty, comes, in time, to be so familiar to us, that we are able to perform it without the smallest danger of mistake; even while the attention appears to be completely engaged with other subjects. The truth seems to be, that in consequence of the association of ideas, the different steps of the process present themselves successively to the thoughts without any recollection on our part, and with a degree of rapidity proportioned to the length of our experience; so as to save us entirely the trouble of hesitation and reflection, by giving us every moment a precise and steady notion of the effect to be produced.*

In the case of some operations which are very familiar to us, we find ourselves unable to attend to, or to recollect, the acts of the will by which they were preceded; and accordingly, some philosophers of great eminence have called in question the existence of such volitions; and have represented our habitual actions as involuntary and mechanical. But surely the circumstance of our inability to recollect our volitions, does not authorize us to dispute their possibility; any more than our inability to attend to the process of the mind, in estimating the distance of an object from the eye, authorizes us to affirm that the perception is instantaneous. Nor does it add any force to the objection to urge, that there are instances in which we find it difficult, or perhaps impossible, to check our habitual actions by a contrary volition. For it must be remembered, that this contrary volition does not remain with us steadily during the whole operation, but is merely a general intention or resolution, which is banished from the mind, as soon as the occasion presents itself, with which the habitual train of our thoughts and volitions is associated.*

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* I do not mean by this observation, to call in question the effects which the practice of the mechanical arts has on the muscles of the body. These are as indisputable as its effects on the mind. A man who has been accustomed to write with his right hand, can write better with his left hand, than another who never practised the art at all; but he cannot write so well with his left hand as with his right.—The effects of practice, therefore, it should seem, are produced partly on the mind, and partly on the body.

It may indeed be said, that these observations only prove the possibility that our habitual actions may be voluntary. But if this be admitted, nothing more can well be required; for surely, if these phenomena are clearly explicable from the known and acknowledged laws of the human mind, it would be unphilosophical to devise a new principle on purpose to account for them. The doctrine, therefore, which I have laid down with respect to the nature of habits, is by no means founded on hypothesis, as has been objected to me by some of my friends; but, on the contrary, the charge of hypothesis falls on those who attempt to explain them, by saying that they are *mechanical* or *automatic*; a doctrine which, if it is at all intelligible, must be understood as implying the existence of some law of our constitution, which has been hitherto unobserved by philosophers; and to which, I believe, it will be difficult to find any thing analogous in our constitution.

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* The solution of this difficulty, which is given by Dr. Porterfield, is somewhat curious.

"Such is the power of custom and habit, that many actions, which are no doubt voluntary, and proceed from our mind, are in certain circumstances, rendered necessary, so as to appear altogether mechanical, and independent of our wills; but it does not from thence follow, that our mind is not concerned in such motions, but only that it has imposed upon itself a law, whereby it regulates and governs them to the greatest advantage. In all this, there is nothing of intrinsical necessity; the mind is at absolute liberty to act as it pleases; but being a wise agent, it cannot choose but to act in conformity to this law, by reason of the utility and advantage that arises from this way of acting." *Treatise on the Eye*, vol. ii. p. 17.

In the foregoing observations, I have had in view a favorite doctrine of Dr. Hartley's; which has been maintained also of late by a much higher authority, I mean Dr. *Reid*.

"Habit,"* says this ingenious author, "differs from instinct, not in its nature, but in its origin; the last being natural, the first acquired. Both operate without will or intention, without thought, and therefore may be called mechanical principles." In another passage,† he expresses himself thus: "I conceive it to be a part of our constitution, that what we have been accustomed to do, we acquire not only a facility but a proneness to do on like occasions; so that it requires a particular will or effort to forbear it, but to do it requires, very often, no will at all."

The same doctrine is laid down still more explicitly by Dr. Hartley.

"Suppose," says he, "a person who has a perfectly voluntary command over his fingers, to begin to learn to play on the harpsichord. The first step is to move his fingers from key to key, with a slow motion, looking at the notes, and exerting an express act of volition in every motion. By degrees the motions cling to one another, and to the impressions of the notes, in the way of associations, so often mentioned, the acts of volition growing less and less express all the time, till at last they become evanescent and imperceptible. For an expert performer will play from notes, or ideas laid up in the memory, and at the same time carry on a quite different train of thoughts in his mind; or even hold a conversation with another. Whence we may conclude, that there is no intervention of the idea, or state of mind, called Will."‡ Cases of this sort, Hartley calls "transitions of voluntary actions into automatic ones."

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* Essays on the Active Powers of Man, p. 128. † Ibid. p. 120.
‡ Vol. i. p. 108, 109.

I cannot help thinking it more philosophical to suppose, that those actions which are originally voluntary, always continue so; although, in the case of operations which are become habitual in consequence of long practice, we may not be able to recollect every different volition. Thus, in the case of a performer on the harpsichord, I apprehend, that there is an act of the will preceding every motion of every finger, although he may not be able to recollect these volitions afterwards; and although he may, during the time of his performance, be employed in carrying on a separate train of thought. For, it must be remarked, that the most rapid performer can, when he pleases, play so slowly, as to be able to attend to, and to recollect, every separate act of his will in the various movements of his fingers; and he can gradually accelerate the rate of his execution, till he is unable to recollect these acts. Now, in this instance, one of two suppositions must be made; the one is, that the operations in the two cases are carried on precisely in the same manner, and differ only in the degree of rapidity, and that when this rapidity exceeds a certain rate, the acts of the will are too momentary to leave any impression on the memory.—The other is, that when the rapidity exceeds a certain rate, the operation is taken entirely out of our hands; and is carried on by some unknown power, of the nature of which we are as ignorant, as of the cause of the circulation of the blood, or of the motion of the intestines.* The last supposition seems to me to be somewhat similar to that of a man who should maintain, that, although a body projected with a moderate velocity, is seen to pass through all the intermediate spaces in moving from one place to another, yet we are not entitled to conclude, that this happens when the body moves so quickly as to become invisible to the eye. The former supposition is supported by the analogy of many other facts in our constitution. Of some of these I have already taken notice; and it would be easy to add to the number.—An expert accountant, for example, can sum up, almost with a single glance of his eye, a long column of figures. He can tell the sum, with unerring certainty; while, at the same time, he is unable to recollect any one of the figures of which that sum is composed; and yet nobody doubts, that each of these figures has passed through his mind, or supposes, that when the rapidity of the process becomes so great that he is unable to recollect the various steps of it, he obtains the result by a sort of inspiration. This last supposition would be perfectly analogous to Dr. Hartley's doctrine concerning the nature of our habitual exertions.

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* This seems to have been the opinion of Bishop Berkeley, whose doctrine concerning the nature of our habitual actions, coincides with that of the two philosophers already quoted. "It must be owned, we are not conscious of the systole and diastole of the heart, or the motion of the diaphragm. It may not, nevertheless, be thence inferred, that unknowing nature can act regularly as well as ourselves. The true inference is, that the self-thinking individual, or human person, is not the real author of those natural motions. And, in fact, no man blames himself, if they are wrong, or values himself, if they are right. The same may be said of the fingers of a musician, which some object to be moved by habit, which understands not; it being evident that what is done by rule, must proceed from something that understands the rule; therefore, if not from the musician himself, from some other active intelligence; the same, perhaps, which governs bees and spiders, and moves the limbs of those who walk in their sleep." See a Treatise, entitled, *Siris*, p. 123, 2d edit.

The only plausible objection which, I think, can be offered to the principles I have endeavoured to establish on this subject, is founded on the astonishing, and almost incredible rapidity they necessarily suppose in our intellectual operations.—When a person, for example, reads aloud; there must according to this doctrine, be a separate volition preceding the articulation of every letter; and it has been found, by actual trial,* that it is possible to pronounce about two thousand letters in a minute. Is it reasonable to suppose, that the mind is capable of so many different acts in an interval of time so very inconsiderable?

With respect to this objection, it may be observed, in the first place, that all arguments against the foregoing doctrine with respect to our habitual exertions, in so far as they are founded on the inconceivable rapidity which they suppose in our intellectual operations, apply equally to the common doctrine concerning our perception of distance by the eye. But this is not all. To what does the supposition amount, which is considered as so incredible? Only to this, that the mind is so formed, as to be able to carry on certain intellectual processes, in intervals of time too short to be estimated by our faculties; a supposition which, so far from being extravagant, is supported by the analogy of many of our most certain conclusions in natural philosophy. The discoveries made by the microscope, have laid open to our senses a world of wonders, the existence of which hardly any man would have admitted upon inferior evidence; and have gradually prepared the way for those physical speculations, which explain some of the most extraordinary phenomena of nature, by means of modifications of matter far too subtile for the examination of our organs. Why then should it be considered as unphilosophical, after having demonstrated the existence of various intellectual processes which escape our attention in consequence of their rapidity, to carry the supposition a little farther, in order to bring under the known laws of the human constitution, a class of mental operations, which must otherwise remain perfectly inexplicable? Surely, our ideas of time are merely relative, as well as our ideas of extension; nor is there any good reason for doubting, that, if our powers of attention and memory were more perfect than they are, so as to give us the same advantage in examining rapid events, which the microscope gives for examining minute portions of extension, they would enlarge our views with respect to the intellectual world, no less, than that instrument has with respect to the material.

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* Incredibili velocitate peraguntur et repetuntur musculorum contractiones. Docent cursus, præsertim quadrupedum; vel lingua, quæ quadringinta vocabula, forte bis mille literas exprimit, spatio temporis quod *minutum* vocare solemus, quamvis ad multas literas exprimendas plures musculorum contractiones requirantur. *Conspectus Medicinæ, Theoreticæ, Auct.* Jac. Gregory. *Edit. altera*, p. 171.

It may contribute to remove, still more completely, some of the scruples which are naturally suggested by the foregoing doctrine, to remark, that, as the great use of attention and memory is to enable us to treasure up the results of our experience and reflection for the future regulation of our conduct, it would have answered no purpose for the author of our nature to have extended their province to those intervals of time, which we have no occasion to estimate in the common business of life. All the intellectual processes I have mentioned are subservient to some particular end, either of perception or of action; and it would have been perfectly superfluous, if, after this end were gained, the steps which are instrumental in bringing it about, were all treasured up in the memory. Such a constitution of our nature would have had no other effect but to store the mind with a variety of useless particulars.

After all I have said, it will perhaps be still thought, that some of the reasonings I have offered are too hypothetical; and it is even possible, that some may be disposed rather to dispute the common theory of vision, than admit the conclusions I have endeavoured to establish. To such readers the following considerations may be of use, as they afford a more palpable instance, than any I have yet mentioned, of the rapidity with which the thoughts may be trained by practice, to shift from one thing to another.

When an equilibrist balances a rod upon his finger, not only the attention of his mind, but the observation of his eye is constantly requisite.—It is evident that the part of his body which supports the object is never wholly at rest; otherwise the object would no more stand upon it, than if placed in the same position upon a table. The equilibrist, therefore, must watch, in the very beginning, every inclination of the object from the proper position, in order to counteract this inclination by a contrary movement. In this manner the object has never time to fall in any one direction, and is supported in a way somewhat analogous to that in which a top is supported on a pivot by being made to spin upon an axis.—That a person should be able to do this in the case of a single object, is curious; but that he should be able to balance, in the same way, two or three, upon different parts of his body, and at the same time balance himself on a small cord or wire, is indeed wonderful. Nor is it possible to conceive that, in such an instance, the mind, at one and the same moment, attends to these different equilibriums; for it is not merely the attention which is requisite, but the eye. We must therefore conclude, that both of these are directed successively to the different equilibriums, but change from one object to another with such velocity, that the effect, with respect to the experiment, is the same as if they were directed to all the objects constantly.

It is worth while to remark farther, with respect to this last illustration, that it affords direct evidence of the possibility of our exerting acts of the will, which we are unable to recollect; for the movements of the equilibrist do not succeed each other in a regular order, like those of the harpsichord player, in performing a piece of music, but must in every instance be regulated by accidents, which may vary in numberless respects, and which indeed must vary in numberless respects every time he repeats the experiment; and therefore, although, in the former case, we should suppose, with Hartley, "that the motions cling to one another, and to the impressions of the notes, in the way of association, without any intervention of the state of mind called will," yet, in this instance, even the possibility of such a supposition is directly contradicted by the fact.

The dexterity of jugglers (which by the way, merits a greater degree of attention from philosophers, than it has yet attracted) affords many curious illustrations of the same doctrine. The whole of this art seems to me to be founded on this principle; that it is possible for a person, by long practice, to acquire a power, not only of carrying on certain intellectual processes more quickly than other men, (for all the feats of legerdemain suppose the exercise of observation, thought, and volition,) but of performing a variety of movements with the hand, before the eyes of a company, in an interval of time too short to enable the spectators to exert that degree of attention which is necessary to lay a foundation for memory.*

As some philosophers have disputed the influence of the will in the case of habits, so others (particularly Stahl and his followers) have gone into the opposite extreme, by referring to the will all the vital motions. If it be admitted, (say these philosophers,) that there are instances in which we will an effect, without being able to make it an object of attention, is it not possible that, what we commonly call the vital and involuntary motions, may be the consequences of our own thought and volition? But there is surely a wide difference between those cases, in which the mind was at first conscious of thought and volition, and gradually lost the power of attending to them, from the growing rapidity of the intellectual process, and a case in which the effect itself is perfectly unknown to the bulk of mankind, even after they arrive at maturity, and in which this effect has continued to take place with the most perfect regularity, from the very beginning of their animal existence, and long before the first dawn of either reflection or experience.

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* See Note (E.)

Some of the followers of Stahl have stated the fact rather inaccurately, even with respect to our habitual exertions. Thus Dr. Porterfield, in his Treatise on the Eye, is at pains to prove, that the soul may think and will without knowledge or consciousness. But this, I own, is to me inconceivable. The true state of the fact, I apprehend, is, that the mind may think and will, without attending to its thoughts and volitions, so as to be able afterwards to recollect them.—Nor is this merely a verbal criticism; for there is an important difference between consciousness and attention, which it is very necessary to keep in view, in order to think upon this subject with any degree of precision. *The one is an involuntary state of the mind: the other is a voluntary act: the one has no immediate connexion with the memory, but the other is so essentially subservient to it, that without some degree of it, the ideas and perceptions which pass through the mind, seem to leave no trace behind them.

When two persons are speaking to us at once, we can

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* The distinction between attention and consciousness is pointed out by Dr. Reid, in his Essays on the Intellectual Powers of Man, p. 60. "Attention is a voluntary act; it requiries an active exertion to begin and to continue it; and it may be continued as long as we will; but consciousness is involuntary, and of no continuance, changing with every thought." The same author has remarked, that these two operations of the mind have been frequently confounded by philosophers, and particularly by Mr. Locke.

attend to either of them at pleasure, without being much disturbed by the other. If we attempt to listen to both, we can understand neither. The fact seems to be, that when we attend constantly to one of the speakers, the words spoken by the other make no impression on the memory, in consequence of our not attending to them; and affect us as little as if they had not been uttered. This power, however, of the mind to attend to either speaker at pleasure, supposes that it is, at one and the same time, conscious of the sensations which both produce.

Another well-known fact may be of use in illustrating the same distinction. A person who accidentally loses his sight, never fails to improve gradually in the sensibility of his touch.—Now, there are only two ways of explaining this. The one is, that in consequence of the loss of the one sense, some change takes place in the physical constitution of the body, so as to improve a different organ of perception. The other, that the mind gradually acquires a power of attending to and remembering those slighter sensations, of which it was formerly conscious, but which, from our habits of inattention, made no impression whatever on the memory. No one, surely, can hesitate for a moment, in pronouncing which of these two suppositions is the more philosophical.

Having treated, at considerable length, of those habits in which both mind and body are concerned, I proceed to make a few remarks on some phenomena which are purely intellectual; and which, I think, are explicable on the same principles with those which have been now under our review.

Every person who has studied the elements of geometry, must have observed many cases in which the truth of a theorem struck him the moment he heard the enunciation. I do not allude to those theorems the truth of which is obvious almost to sense, such as, that any two sides of a triangle are greater than the third side, or that one circle cannot cut another circle in more than two points; but to some propositions with respect to quantity, considered abstractly, (to some, for example, in the fifth book of Euclid,) which almost every student would be ready to admit without a demonstration. These propositions, however, do by no means belong to the class of axioms; for their evidence does not strike every person equally, but requires a certain degree of quickness to perceive it. At the same time, it frequently happens, that, although we are convinced the *proposition* is true, we cannot state immediately to others upon what our conviction is founded. In such cases, I think it highly probable, that before we give our assent to the theorem, a process of thought * has passed through the mind, but has passed through it so quickly, that we cannot, without difficulty, arrest our ideas in their rapid succession, and state them to others in their proper and logical order. It is some confirmation of this theory, that there are no propositions of which it is more difficult to give a legitimate proof from first principles, than of those which are only removed a few steps from the class of axioms,—and that those men who are the most remarkable for their quick perception of mathematical truth, are seldom clear and methodical in communicating their knowledge to others.—A man of a moderate degree of quickness, the very first time he is made acquainted with the fundamental principles of the method of fluxions, or of the method of prime and ultimate ratios, is almost instantaneously satisfied of their truth; yet how difficult is it to demonstrate these principles rigorously!

What I have now said with respect to mathematics, may be applied in a great measure to the other branches of knowledge. How many questions daily occur to us, in morals, in politics, and in common life, in considering which, we almost instantaneously see where the truth lies, although we are not in a condition, all at once, to explain the grounds of our conviction! Indeed, I apprehend, there are few, even among those who have devoted themselves to study, but who have not been habituated to communicate their knowledge to others, who are able to exhibit, in their natural order, the different steps of any investigation by which they have been led to form a particular conclusion. The common observation, therefore, that an obscure elocution always indicates an imperfect knowledge of the subject, although it may perhaps be true with respect to men who have cultivated the art of speaking, is by no means to be relied on as a general rule, in judging of the talents of those, whose speculations have been carried on with a view merely to their own private satisfaction.

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* Of the nature of these processes of thought, I shall treat fully in another part of my work, under the article of Reasoning. I have expressed myself concerning them in this chapter, in as general terms as possible.

In the course of my own experience, I have heard of more than one instance of men who, without any mathematical education, were able, on a little reflection, to give a solution of any simple algebraical problem; and who, at the same time, were perfectly incapable of explaining by what steps they obtained the result. In these cases, we have a direct proof of the possibility of investigating even truths which are pretty remote, by an intellectual process, which, as soon as it is finished, vanishes almost entirely from the memory.—It is probable, that something of the same kind takes place much more frequently in the other branches of knowledge, in which our reasonings consist commonly but of a few steps. Indeed, I am inclined to think, that it is in this way that by far the greater part of our speculative conclusions are formed.

There is no talent, I apprehend, so essential to a public speaker, as to be able to state clearly every different step of those trains of thought by which he himself was led to the conclusions he wishes to establish. Much may be here done by study and experience. Even in those cases in which the truth of a proposition seems to strike us instantaneously, although we may not be able, at first, to discover the media of proof, we seldom fail in the discovery, by perseverance.—Nothing contributes so much to form this talent as the study of metaphysics; not the absurd metaphysics of the schools, but that study which has the operations of the mind for its object. By habituating us to reflect on the subjects of our consciousness, it enables us to retard, in a considerable degree, the current of thought; to arrest many of those ideas, which would otherwise escape our notice; and to render the arguments which we employ for the conviction of others, an exact transcript of those trains of inquiry and reasoning, which originally led us to form our opinions.

These observations lead me to take notice of an important distinction between the intellectual habits of men of speculation and of action. The latter, who are under a necessity of thinking and deciding on the spur of the occasion, are led to cultivate, as much as possible, a quickness in their mental operations, and sometimes acquire it in so great a degree, that their judgment seems to be almost intuitive. To those, on the other hand, who have not merely to form opinions for themselves, but to communicate them to others, it is necessary to retard the train of thought as it passes in the mind, so as to be able afterwards to recollect every different step of the process; a habit, which, in some cases, has such an influence on the intellectual powers, that there are men, who, even in their private speculations, not only make use of words as an instrument of thought, but form these words into regular sentences.

It may perhaps appear, at first, a paradoxical observation, that one great employment of philosophers, in a refined age, is to bring to light, and arrange, those rapid and confused trains of thought, which appear from the structure of languages, and from the monuments of ancient laws and governments, to have passed through the minds of men in the most remote and unenlightened periods. In proof, however, of this, it is sufficient to mention, the systematical analogy which we find, to a certain degree, running through the structure of the most imperfect tongues, (for example, in the formation of the different parts of the verbs,) and those general principles, which the philosophical lawyer traces amidst an apparent chaos of precedents and statutes. In the language, too, of the rudest tribe, we find words transferred from one subject to another, which indicate, in the mind of the individual who first made the transference, some perception of resemblance or of analogy. Such transferences can hardly be ascribed to accident, but may be considered as proofs that the analogies, which the philosopher afterwards points out between the objects which are distinguished by the same name, had been perceived by the inventors of language, although it is more than probable that they never expressed them in words, nor could even have explained them if they had been questioned on the subject.

Nor will this appear a bold or incredible supposition, if we reflect on the sagacity and ingenuity which savages, and even peasants, discover, in overcoming the difficulties which occur in their situation. They do not, indeed, engage in long processes of abstract reasoning, for which they have no inclination, and which it is impossible to carry on without the use of a cultivated and a copious language; but, when pressed by present circumstances, they combine means to accomplish particular ends, in a manner which indicates the exercise both of invention and of reasoning. It is probable that such processes are carried on in their minds, with much less assistance from language than a philosopher would derive on a similar occasion; and it is almost certain, that they would find themselves perfectly incapable of communicating to others the steps by which they were led to their conclusions. In consequence of these circumstances, the attainments of the human mind in its ruder state, perish with the individual, without being recorded in writing, or perhaps expressed in words; and we are left to infer them indirectly from the structure of language, or from the monuments of ancient customs and institutions.

When a train of thought leads to any interesting conclusion, or excites any pleasant feeling, it becomes peculiarly difficult to arrest our fleeting ideas; because the mind, when once it has felt the pleasure, has little inclination to retrace the steps by which it arrived at it. This is one great cause of the difficulty attending philosophical criticism. When a critic explains to us, why we are pleased with any particular beauty, or offended with any defect, it is evident, that if his theory be just, the circumstances which he points out as the foundation of our pleasure or uneasiness, must have occurred to our minds before we were pleased with the beauty, or offended with the defect. In such cases it sometimes happens, when a critic has been fortunate in his theory, that we recognise at first sight our old ideas, and without any farther consideration, are ready to bear testimony to the *truth*, from our own consciousness. So very difficult, however, is it to attend to the ideas which excite such feelings, that it often appears to be doubtful, *whether* a *theory* be right or wrong; and that where there is every reason to believe that the pleasure is produced in all men in the same way, different critics adopt different theories with respect to its cause. It is long practice alone, joined to what is commonly called a metaphysical turn of mind, (by which I think is chiefly to be understood, a capacity of reflecting on the subjects of our consciousness,) that can render such efforts of *attention* easy. Exquisite sensibility, so far from being useful in this species of criticism, both gives a disrelish for the study, and disqualifies for pursuing it.

Before we leave the subject of attention, it is proper to take notice of a question which has been stated with respect to it; whether we have the power of attending to more than one thing at one and the same instant; or, in other words, whether we can attend at one and the same instant, to objects which we can attend to separately?* This question has, if I am not mistaken, been already decided by several philosophers in the negative; and I acknowledge, for my own part, that although their opinion has not only been called in question by others, but even treated with some degree of contempt as altogether hypothetical, it appears to me to be the most reasonable and philosophical that we can form on the subject.

There is indeed a great variety of cases, in which the mind apparently exerts different acts of attention at once; but from the instances which have already been mentioned, of the astonishing rapidity of thought, it is obvious, that all this may be explained, without supposing these acts to be co-existent; and I may even venture to add, it may all be explained in the most satisfactory manner, without ascribing to our intellectual operations, a greater degree of rapidity than that with which we know from the fact that they are sometimes carried on. The effect of practice, in increasing this capacity of apparently attending to different things at once, renders this explanation of the phenomenon in question more probable than any other.

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* I have added this explanation to obviate the question, What is meant by one object?

The case of the equilibrist and rope-dancer already mentioned, is particularly favorable to this explanation; as it affords direct evidence of the possibility of the mind's exerting different successive acts in an interval of time so short, as to produce the same sensible effect, as if they had been exerted at one and the same moment. In this case, indeed, the rapidity of thought is so remarkable, that if the different acts of the mind were not all necessarily accompanied with different movements of the eye, there can be no reason for doubting, that the philosophers, whose doctrine I am now controverting, would have asserted, that they are all mathematically co-existent.

Upon a question, however, of this sort, which does not admit of a perfectly direct appeal to the fact, I would by no means be understood to decide with confidence; and therefore I should wish the conclusions I am now to state, to be received as only conditionally established. They are necessary and obvious consequences of the general principle, "that the mind can only attend to one thing at once;" but must stand or fall with the truth of that supposition.

It is commonly understood, I believe, that, in a concert of music, a good ear can attend to the different parts of the music separately, or can attend to them all at once, and feel the full effect of the harmony. If the doctrine, however, which I have endeavoured to establish, be admitted, it will follow, that, in the latter case, the mind is constantly varying its attention from the one part of the music to the other, and that its operations are so rapid, as to give us no perception of an interval of time.

The same doctrine leads to some curious conclusions with respect to vision. Suppose the eye to be fixed in a particular position, and the picture of an object to be painted on the retina. Does the mind perceive the complete figure of the object at once; or is this perception the result of the various perceptions we have of the different points in the outline? With respect to this question, the principles already stated lead me to conclude, that the mind does at one and the same time, perceive every point in the outline of the object, (provided the whole of it be painted on the retina at the same instant,) for perception, like consciousness, is an involuntary operation. As no two points, however, of the outline are in the same direction, every point, by itself, constitutes just as distinct an object of attention to the *mind*, as if it were separated by an interval of empty space from all the rest. If the doctrine therefore formerly stated be just, it is impossible for the mind to attend to more than one of these points at once; and as the perception of the figure of the object implies a knowledge of the relative situation of the different points, with respect to each other, we must conclude that the perception of figure by the eye, is the result of a number of different acts of attention. These acts of attention, however, are performed with such rapidity, that the effect, with respect to us, is the same as if the perception were instantaneous.

In farther confirmation of this reasoning, it may be remarked, that if the perception of visible figure were an immediate consequence of the picture on the retina, we should have, at the first glance, as distinct an idea of a figure of a thousand sides, as of a triangle or a square. The truth is, that when the figure is very simple, the process of the mind is so rapid, that the perception seems to be instantaneous: but when the sides are multiplied beyond a certain number, the interval of time necessary for these different acts of attention becomes perceptible.

It may perhaps be asked, what I mean by a *point* in the outline of a figure, and what it is that constitutes this point *one* object of attention? The answer, I apprehend, is, that this point is the *minimum visibile*. If the point be less, we cannot perceive it: if it be greater, it is not all seen in one direction.

If these observations be admitted, it will follow, that, without the faculty of memory, we could have had no perception of visible figure.

CHAPTER THIRD.

OF CONCEPTION.

By Conception, I mean that power of the mind, which enables it to form a notion of an absent object of perception, or of a sensation which it has formerly felt. I do not contend that this is exclusively the proper meaning of the word, but I think that the faculty which I have now defined, deserves to be distinguished by an appropriated name.

Conception is often confounded with other powers. When a painter makes a picture of a friend, who is absent or dead, he is commonly said to paint from memory: and the expression is sufficiently correct for common conversation. But in an analysis of the mind, there is ground for a distinction. The power of conception enables him to make the features of his friend an object of thought, so as to copy the resemblance; the power of memory recognizes these features as a former object of perception. Every act of memory includes an idea of the past; conception implies no idea of time whatever.*

According to this view of the matter, the word *conception* corresponds to what was called by the schoolmen *simple apprehension*; with this difference only, that they included, under this name, our apprehension of general propositions, whereas I should wish to limit the application of the word *conception* to our sensations, and the objects of our perceptions. Dr. Reid, in his Inquiry, substitutes the word *conception* instead of the simple apprehension of the schools, and employs it in the same extensive signification. I think it may contribute to make our ideas more distinct, to restrict its meaning:—

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* Shakspeare calls this power "the mind's eye."

"*Hamlet.*—My father! Methinks I see my father.
"*Horatio.*—Where, my Lord?
"*Hamlet.*—In my mind's eye, Horatio."
Act i. Scene 4.

and for such a restriction, we have the authority of philosophers in a case perfectly analogous.—In ordinary language, we apply the same word *perception*, to the knowledge, which we have by our senses of external objects, and to our knowledge of speculative truth: and yet an author would be justly censured, who should treat of these two operations of the mind under the same article of perception. I apprehend there is as wide a difference between the conception of a truth, and the conception of an absent object of sense, as between the perception of a tree, and the perception of a mathematical theorem.—I have therefore taken the liberty to distinguish also the two former operations of the mind: and under the article of *conception* shall confine myself to that faculty, whose province it is to enable us to form a notion of our past sensations, or of the objects of sense that we have formerly perceived.

Conception is frequently used as synonymous with imagination. Dr. Reid says, that "imagination, in its proper sense, signifies a lively conception of objects of sight." "This is a talent," he remarks, "of importance to poets and orators; and deserves a proper name, on account of its connexion with their arts." He adds, that "imagination is distinguished from conception, as a part from a whole."

I shall not inquire, at present, into the proper English meaning of the words *conception* and *imagination*. In a study such as this, so far removed from the common purposes of speech, some latitude may perhaps be allowed in the use of words; provided only we define accurately those we employ, and adhere to our own definitions.

The business of conception, according to the account I have given of it, is to present us with an exact transcript of what we have felt or perceived. But we have, moreover, a power of modifying our conceptions, by combining the parts of different ones together, so as to form new wholes of our own creation. I shall employ the word *imagination* to express this power; and, I apprehend, that this is the proper sense of the word; if imagination be the power which gives birth to the productions of the poet and the painter. This is not a simple faculty of the mind. It presupposes abstraction, to separate from each other qualities and circumstances which have been perceived in conjunction, and also judgment and taste to direct us in forming the combinations. If they are made wholly at random, they are proofs of insanity.*

The first remarkable fact which strikes us with respect to conception is, that we can conceive the objects of some senses much more easily than those of others. Thus we can conceive an absent visible object, such as a building that is familiar to us, much more easily than a particular sound, a particular taste, or a particular pain, which we have formerly felt. It is probable, however, that this power might be improved in the case of some of our senses. Few people, I believe, are able to form a very distinct conception of sounds; and yet it is certain, that, by practice, a person may acquire a power of amusing himself with reading written music. And in the case of poetical numbers, it is universally known that a reader may enjoy the harmony of the verse, without articulating the words, even in a whisper. In such cases, I take for granted, that our pleasure arises from a very strong conception of the sounds which we have been accustomed to associate with particular written characters.

The peculiarity in the case of visible objects, seems to arise from this; that when we think of a sound or of a taste, the object of our conception is one single detached sensation; whereas every visible object is complex; and the conception which we form of it as a whole, is aided by the association of ideas. To perceive the force of this observation, it is necessary to recollect what was formerly said on the subject of attention. As we cannot at one instant attend to every point of the picture of an object on the retina, so, I apprehend, we cannot at one instant form a conception of the whole of any visible object; but that our conception of the object as a whole, is the result of many conceptions. The association of ideas connects the different parts together, and presents them to the mind in their proper arrangement; and the various relations which these parts bear to one another in point of situation, contribute greatly to strengthen the associations. It is some confirmation of this theory, that it is more easy to remember a succession of sounds, than any particular sound which we have heard detached and unconnected.

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* In common discourse, we often use the phrase of *thinking upon an object,* to express what I here call, the *conception* of it.—In the following passage, Shakspeare uses the former of these phrases, and the words *imagination* and *apprehension* as synonymous with each other.

—"Who can hold a fire in his hand,
By thinking on the frosty Caucasus?
Or cloy the hungry edge of appetite,
By bare imagination of a feast?
Or wallow naked in December's snow,
By thinking on fantastic summer's heat?
Oh no! the apprehension of the good
Gives but the greater feeling to the worse."

K. RICHARD II. Act. I. Scene 6.

The power of conceiving visible objects, like all other powers that depend on the association of ideas, may be wonderfully improved by habit. A person accustomed to drawing, retains a much more perfect notion of a building or of a landscape which he has seen, than one who has never practised that art. A portrait-painter, traces the form of the human body from memory, with as little exertion of attention, as he employs in writing the letters which compose his name.

In the power of conceiving colors, too, there are striking differences among individuals; and, indeed, I am inclined to suspect, that, in the greater number of instances, the supposed defects of sight in this respect, ought to be ascribed rather to a defect in the power of conception. One thing is certain, that we often see men who are perfectly sensible of the difference between two colors when they are presented to them, who cannot give names to these colors with confidence, when they see them apart, and are perhaps apt to confound the one with the other. Such men, it should seem, feel the sensation of color like other men, when the object is present, but are incapable (probably in consequence of some early habit of inattention) to conceive the sensation distinctly when the object is removed. Without this power of conception it is evidently impossible for them, however lively their sensations may be, to give a name to any color; for the application of the name supposes not only a capacity of receiving the sensation, but a power of comparing it with one formerly felt. At the same time I would not be understood by these observations to deny, that there are cases, in which there is a natural defect of the organ in the perception of color. In some cases, perhaps, the sensation is not felt at all, and in others, the faintness of the sensation may be one cause of those habits of inattention, from which the incapacity of conception has arisen.

A talent for lively description, at least in the case of sensible objects, depends chiefly on the degree in which the describer possesses the power of conception. We may remark, even in common conversation, a striking difference among individuals in this respect. One man, in attempting to convey a notion of any object he has seen, seems to place it before him, and to paint from actual perception; another, although not deficient in a ready elocution, finds himself, in such a situation, confused and embarrassed among a number of particulars imperfectly apprehended, which crowd into his mind without any just order and connexion. Nor is it merely to the accuracy of our descriptions that this power is subservient: it contributes more than any thing else to render them striking and expressive to others, by guiding us to a selection of such circumstances as are most prominent and characteristical; insomuch that I think it may reasonably be doubted, if a person would not write a happier description of an object from the conception than from the actual perception of it. It has been often remarked, that the perfection of description does not consist in a minute specification of circumstances, but in a judicious selection of them, and that the best rule for making the selection is, to attend to the particulars that make the deepest impression on our own minds. When the object is actually before us, it is extremely difficult to compare the impressions which different circumstances produce, and the very thought of writing a description would prevent the impressions which would otherwise take place. When we afterwards conceive the object, the representation of it we form to ourselves, however lively, is merely an outline; and is made up of those circumstances, which really struck us most at the moment, while others of less importance are obliterated. The impression, indeed, which a circumstance makes on the mind, will vary considerably with the degree of a person's taste; but I am inclined to think, that a man of lively conceptions, who paints from these while his mind is yet warm from the original scene, can hardly fail to succeed in descriptive composition.

The facts and observations which I have now mentioned, are applicable to conception, as distinguished from imagination. The two powers, however, are very nearly allied, and are frequently so blended, that it is difficult to say, to which of the two some particular operations of the mind are to be referred. There are also many general facts which hold equally with respect to both. The observations which follow, if they are well founded, are of this number, and might have been introduced with equal propriety under either article. I mention them here, as I shall have occasion to refer to them in the course of the following work, in treating of some subjects, which will naturally occur to our examination, before we have another opportunity of considering this part of our constitution.

It is a common, I believe I may say an univetsal, doctrine among logicians, that conception (or imagination, which is often used as synonymous with it) is attended with no belief of the existence of its object. "Perception," says Dr. Reid, "is attended with a belief of the present existence of its object; memory, with a belief of its past existence; but imagination is attended with no belief at all; and was therefore called by the school-men, *apprehensio simplex*."

It is with great diffidence, that I presume to call in question a principle, which has been so generally received; yet there are several circumstances which lead me to doubt of it. If it were a specifical distinction between perception and imagination, that the former is always attended with belief, and the latter with none, then the more lively our imagination were of any object, and the more completely that object occupied the attention, the less would we be apt to believe its existence; for it is reasonable to think, that when any of our powers is employed separately from the rest, and there is nothing to withdraw the attention from it, the laws which regulate its operation will be most obvious to our observation, and will be most completely discriminated from those which are characteristical of the other powers of the mind. So very different however is the fact, that it is matter of common remark, that when imagination is very lively, we are apt to ascribe to its objects a real existence, as in the case of dreaming or of madness; and we may add, in the case of those who, in spite of their own general belief of the absurdity of the vulgar stories of apparitions, dare not trust themselves alone with their own imaginations in the dark. That imagination is in these instances attended with belief, we have all the evidence that the nature of the thing admits of, for we feel and act in the same manner as we should do, if we believed that the objects of our attention were real; which is the only proof that metaphysicians produce, or can produce, of the belief which accompanies perception.

In these cases, the fact that I wish to establish is so striking, that it has never been called in question; but in most cases, the impression which the objects of imagination make on the mind is so momentary, and is so immediately corrected by the surrounding objects of perception, that it has not time to influence our conduct. Hence we are apt to conclude on a superficial view, that imagination is attended with no belief; and the conclusion is surely just in most cases, if by belief we mean a permanent conviction which influences our conduct. But if the word be used in the strict logical sense, I am inclined to think, after the most careful attention to what I experience in myself, that the exercise both of conception and imagination is always accompanied with a belief, that their objects exist.* When a painter conceives the face and figure of an absent friend in order to draw his picture, he believes for the moment that his friend is before him. The belief, indeed, is only momentary; for it is extremely difficult, in our waking hours, to keep up a steady and undivided attention to any object we conceive or imagine, and as soon as the conception or the imagination is over, the belief which attended it is at an end. We find that we can recall and dismiss the objects of these powers at pleasure; and therefore we learn to consider them as creations of the mind, which have no separate and independent existence.

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* As the foregoing reasoning, though satisfactory to myself, has not appeared

The compatibility of such a speculative disbelief, as I have here supposed, of the existence of an object, with a contrary momentary belief, may perhaps be more readily admitted if the following experiment be considered with attention.

Suppose a lighted candle to be so placed before a concave mirror, that the image of the flame may be seen between the mirror and the eye of the observer. In this case, a person who is acquainted with the principles

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equally so to some of my friends, I should wish the reader to consider the remarks which I now offer, as amounting rather to a query, than to a decided opinion.

May I take the liberty of adding, that one of the arguments which I have stated, in opposition to the common doctrine concerning imagination, appears to me to be authorized in some measure, by the following reasoning of Dr. Reid's on a different subject? In considering those sudden bursts of passion, which lead us to wreak our vengeance upon inanimate objects, he endeavours to show, that we have, in such cases, a momentary belief that the object is alive. "I confess," says he, "it seems to be impossible that there should be resentment against a thing, which, at that very moment, is considered as inanimate; and consequently incapable either of intending hurt, or of being punished.—There must, therefore, I conceive, be some momentary notion or conception, that the object of our resentment is capable of punishment."

In another passage, the same author remarks, that "men may be governed, in their practice, by a belief, which, in speculation, they reject."

"I knew a man," says he, "who was as much convinced as any man, of the folly of the popular belief of apparitions in the dark: yet he could not sleep in a room alone, nor go alone into a room in the dark. Can it be said, that his fear did not imply a belief of danger? This is impossible. Yet his philosophy convinced him, that he was in no more danger in the dark when alone, than with company. Here an unreasonable belief, which was merely a prejudice of the nursery, stuck so fast as to govern his conduct in opposition to his speculative belief as a philosopher and a man of sense."

"There are few persons who can look down from the battlement of a very high tower without fear; while their reason convinces them, that they are in no more danger than when standing upon the ground."

These facts are easily explicable, on the supposition, that whenever the objects of imagination engross the attention wholly, (which they may do, in opposition to any speculative opinion with respect to their non-existence,) they produce a temporary belief of their reality.—Indeed, in the last passage, Dr. Reid seems to admit this to be the case; for, to say that a man, who has a dread of apparitions, believes himself to be in danger when left alone in the dark, is to say, in other words, that he believes (for the time) that the objects of his imagination are real.

of optics, or who has seen the experiment made before, has so strong a speculative conviction of the non-existence of the object in that place where he sees its image, that he would not hesitate to put his finger to the apparent flame, without any apprehension of injury.

Suppose, however, that in such a case it were possible for the observer to banish completely from his thoughts all the circumstances of the experiment, and to confine his attention wholly to his perception; would he not believe the image to be a reality; and would he not expect the same consequences from touching it, as from touching a real body in a state of inflammation? If these questions be answered in the affirmative, it will follow, that the effect of the perception, while it engages the attention completely to itself, is to produce belief; and that the speculative disbelief, according to which our conduct in ordinary cases is regulated, is the result of a recollection of the various circumstances with which the experiment is accompanied.

If, in such a case as I have now supposed, the appearance exhibited to us is of such a nature, as to threaten us with any immediate danger, the effect is the same as if we were to banish from our thoughts the circumstances of the experiment, and to limit our attention solely to what we perceive; for here the belief, which is the first effect of the perception, alarms our fears, and influences our conduct, before reflection has time to operate. In a very ingenious optical deception, which was lately exhibited in this city, the image of a flower was presented to the spectator; and when he was about to lay hold of it with his hand, a stroke was aimed at him by the image of a dagger. If a person who has seen this experiment is asked in his cooler moments, whether or not he believes the dagger which he saw to be real, he will readily answer in the negative; and yet the accurate statement of the fact undoubtedly is, that the first and the proper effect of the perception is belief, and that the disbelief he feels, is the effect of subsequent reflection.

The speculative disbelief which we feel with respect to the illusions of imagination, I conceive to be analogous to our speculative disbelief of the existence of the object exhibited to the eye in this optical deception; as our belief that the illusions of imagination are real, while that faculty occupies the mind exclusively, is analogous to the belief produced by the optical deception while the attention is limited to our perception, and is withdrawn from the circumstances in which the experiment is made.*

These observations lead me to take notice of a circumstance with respect to the belief accompanying perception, which it appears to me necessary to state, in order to render Dr. Reid's doctrine on that subject completely satisfactory. He has shown, that certain sensations are, by a law of our nature, accompanied with an irresistible belief of the existence of certain qualities of external objects. But this law extends no farther than to the present existence of the quality; that is, to its existence while we feel the corresponding sensation. Whence is it then, that we ascribe to the quality, an existence independent of our perception? I apprehend we learn to do this by experience alone. We find that we cannot, as in the case of imagination, dismiss or recall the perception of an external object. If I open my eyes, I cannot prevent myself from seeing the prospect which is before me. I learn therefore to ascribe to the objects of my senses, not only an existence at the time I perceive them, but an independent and a permanent existence.

It is a strong confirmation of this doctrine, that in sleep, when (as I shall endeavour afterwards to show) the influence of the will over the train of our thoughts is suspended, and when, of consequence, the time of their continuance in the mind is not regulated by us, we ascribe to the objects of imagination an independent and permanent existence, as we do when awake to the objects of perception. The same thing happens in those kinds of madness, in which a particular idea takes possession of the attention, and occupies it to the exclusion of every thing else. Indeed, madness seems in many cases to arise entirely from a suspension of the influence of the will over the succession of our thoughts; in consequence of *which*, the objects of imagination appear to have an existence independent of our volition, and are therefore, agreeably to the foregoing doctrine, mistaken for *realities*.

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* It may appear to some readers rather trifling to add, and yet to others the remark may not be altogether superfluous, that it is not my intention to insinuate by the foregoing illustrations, that the relation between perception and imagination has the most distant analogy to that between the perception of the object, and the perception of its optical image.

Numberless other illustrations of the same general fact occur to me; but the following is, I think, one of the most striking. I mention it, in preference to the rest, as it appears to me to connect the doctrine in question with some principles which are now universally admitted among philosophers.

The distinction between the original and the acquired perceptions of sight, is familiarly known to every one who has the slightest acquaintance with the elements of optics. That this sense, prior to experience, conveys to us the notion of extension in two dimensions only, and that it gives us no information concerning the distances at which objects are placed from the eye, are propositions which nobody, I presume, in the present state of science, will be disposed to controvert. In what manner we are enabled by a comparison between the perceptions of sight and those of touch, to extend the province of the former sense to a variety of qualities originally perceived by the latter sense only, optical writers have explained at great length; but it is not necessary for my present purpose to enter into any particular details with respect to their reasonings on the subject. It is sufficient for me to remark, that, according to the received doctrine, the original perceptions of sight become, in consequence of experience, signs of the tangible qualities of external objects, and of the distances at which they are placed from the organ; and that, although the knowledge we obtain, in this manner, of these qualities and distances, seems, from early and constant habits, to be an instantaneous perception; yet, in many cases, it implies an exercise of the judgment, being founded on a comparison of a variety of different circumstances.

From these principles, it is an obvious consequence, that the knowledge we obtain by the eye, of the tangible qualities of bodies, involves the exercise of conception, according to the definitions of that power which has already been given. In ordinary discourse, indeed, we ascribe this knowledge, on account of the instantaneousness with which it is obtained, to the power of perception; but if the common doctrine on the subject be just, it is the result of a complex operation of the mind; comprehending, first, the perception of those qualities, which are the proper and original objects of sight; and, secondly, the conception of those tangible qualities of which the original perceptions of sight are found from experience to be the signs. The notions therefore we form, by means of the eye, of the tangible qualities of bodies, and of the distances of these objects from the organ, are mere conceptions; strongly, and indeed indissolubly associated, by early and constant habit, with the original perceptions of sight.

When we open our eyes on a magnificent prospect, the various distances at which all its different parts are placed from the eye, and the immense extent of the whole scene before us, seem to be perceived as immediately, and as instantaneously by the mind, as the colored surface which is painted on the retina. The truth, however, unquestionably is, that this variety of distance, and this immensity of extent, are not objects of sense but of conception; and the notions we form of them when our eyes are open, differ from those we should form of them with our eyes shut, only in this, that they are kept steadily in the view of the mind, by being strongly associated with the sensations of color, and with the original perceptions of sight.—This observation will be the more readily admitted, if it be considered, that, by a skilful imitation of a natural landscape, in a common show-box, the mind may be led to form the same notions of variety of distance, and even of immense extent, as if the original scene were presented to our senses: and that, although, in this case, we have a speculative conviction that the sphere of our vision only extends to a few inches, yet so strong is the association between the original perceptions of sight, and the conceptions which they habitually produce, that it is not possible for us, by any effort of our will, to prevent these conceptions from taking place.

From these observations it appears, that when the conceptions of the mind are rendered steady and permanent, by being strongly associated with any sensible impression, they command our belief no less than our actual perceptions; and, therefore, if it were possible for us, with our eyes shut, to keep up, for a length of time, the conception of any sensible object, we should, as long as this effort continued, believe that the object was present to our senses.

It appears to me to be no slight confirmation of these remarks, *that although, in the dark, the illusions of imagination* are much more liable to be mistaken for realities, than when their momentary effects on the belief are continually checked and corrected by the objects which the light of day presents to our perceptions; yet, even total darkness is not so alarming to a person impressed with the vulgar stories of apparitions, as a faint and doubtful twilight, which affords to the conceptions an opportunity of fixing and prolonging their existence, by attaching themselves to something which is obscurely exhibited to the eye.—In like manner when we look through a fog, we are frequently apt to mistake a crow for a man; and the conception we have, upon such an occasion, of the human figure, is much more distinct and much more steady, than it would be possible for us to form, if we had no sensible object before us; insomuch that when, on a more attentive observation, the crow shrinks to its own dimensions, we find it impossible, by any effort, to conjure up the phantom which a moment before we seemed to perceive.

If these observations are admitted, the effects which exhibitions of fictitious distress produce on the mind, will appear less wonderful than they are supposed to be. During the representation of a tragedy, I acknowledge, that we have a general conviction that the whole is a fiction; but, I believe, it will be found, that the violent emotions which are sometimes produced by the distresses of the stage, take their rise, in most cases, from a momentary belief, that the distresses are real. I say in most cases, because I acknowledge, that independently of any such belief, there is something contagious in a faithful expression of any of the passions.

The emotions produced by tragedy are, upon this supposition, somewhat analogous to the dread we feel when we look down from the battlement of a tower.* In both cases, we have a general conviction, that there is no ground for the feelings we experience, but the momentary influences of imagination are so powerful as to produce these feelings, before reflection has time to come to our relief.

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* With respect to the dread which we feel in looking down from the battlement of a tower, it is curious to remark the effects of habit in gradually destroying it. The manner in which habit operates in this case, seems to be by giving us a command over our thoughts, so as to enable us to withdraw our attention from the precipice before us, and direct it to any other object at pleasure. It is thus that the mason and the sailor not only can take precautions for their own safety, but remain completely masters of themselves in situations where other men, engrossed with their imaginary danger, would experience a total suspension of their faculties. Any strong passion which occupies the mind, produces, for the moment, the same effect with habit. A person alarmed with the apprehension of fire, has been known to escape from the top of a house, by a path which, at another time, he would have considered as impracticable; and soldiers, in mounting a breach, are said to have sometimes found their way to the enemy, by a route which appeared inaccessible after their violent passions had subsided.

CHAPTER FOURTH.

OF ABSTRACTION.

SECTION I.

General Observations on this Faculty of the Mind.

THE origin of appellatives, or, in other words, the origin of those classes of objects which, in the schools, are called *genera* and *species*, has been considered by some *philosophers* as one of the most difficult problems in *metaphysics*. The account of it which is given by Mr. Smith, in his dissertation on the Origin of Languages, appears to me to be equally simple and satisfactory. "The assignation," says he, "of particular names, to denote particular objects; that is, the institution of nouns substantive; would probably be one of the first steps towards the formation of Language. The particular cave, whose covering sheltered the savage from the weather; the particular tree, whose fruit relieved his hunger; the particular fountain, whose water allayed his thirst; would first be denominated by the words, cave, tree, fountain; or by whatever other appellations he might think proper, in that primitive jargon, to mark them. Afterwards, when the more enlarged experience of this savage had led him to observe, and his necessary occasions obliged him to make mention of, other caves, and other trees, and other fountains; he would naturally bestow upon each of those new objects, the same name by which he had been accustomed to express the similar object he was first acquainted with. And thus, those words, which were originally the proper names of individuals, would each of them insensibly become the common name of a multitude." *

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* The same account of the progress of the mind in the formation of *genera*, is given by the Abbé de Condillac.

“It is this application,” he continues, “of the name of an individual to a great number of objects, whose resemblance naturally recalls the idea of that individual, and of the name which expresses it, that seems originally to have given occasion to the formation of those classes, and assortments, which, in the schools, are called *genera* and *species;* and of which the ingenious and eloquent Rousseau finds himself so much at a loss to account for the origin. What constitutes a *species*, is merely a number of objects, bearing a certain degree of resemblance to one another; and, on that account, denominated by a single appellation, which may be applied to express any one of them.”[*]

This view of the natural progress of the mind, in forming classifications of external objects, receives some illustration from a fact mentioned by Captain Cook in his account of a small island called Wateeoo, which he visitêd in sailing from New Zealand to the Friendly Islands. “The inhabitants,” says he, “were afraid to come near our cows and horses, nor did they form the least conception of their nature. But the sheep and goats did not surpass the limits of their ideas; for they gave us to understand that they knew them to be birds.” “It will appear,” he adds, “rather incredible, that human ignorance could ever make so strange a mistake, there not being the most distant similitude between a sheep or goat, and any winged animal. But these people seemed to know nothing of the existence of any other land animals, besides hogs, dogs, and birds. Our sheep and goats, they could see, were very different creatures from the two first, and therefore they inferred that they must belong to the latter class, in which they knew that there is a considerable variety of species.” I would add to Cook's very judicious remarks, that the mistake of these islanders probably did not arise from

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“Un enfant appelle du nom d'*Arbre* le premier arbre que nous lui montrons. Un second arbre qu'il voit ensuite lui rapelle la même idée; il lui donne le même nom; de même à un troisième, à un quatrième, et voilà le mot d'*Arbre* donné d'abord à un individu, qui devient pour lui un nom de classe ou de genre, une idée abstraite qui comprend tous les arbres en général.”

[*] Dissertation on the Origin of Languages, annexed to Mr. Smith's Theory of Moral Sentiments.

their considering a sheep or a goat as bearing a more striking resemblance to a bird, than to the two classes of quadrupeds with which they were acquainted; but to the want of a generic word, such as *quadruped*, comprehending these two species; which men in their situation would no more be led to form, than a person who had only seen one individual of each species, would think of an appellative to express both, instead of applying a proper name to each. In consequence of the variety of birds, it appears, that they had a generic name comprehending all of them, to which it was not unnatural for them to refer any new animal they met with.

The classification of different objects supposes a power of attending to some of their qualities or attributes, without attending to the rest; for no two objects are to be found without some specific difference; and no assortment or arrangement can be formed among things not perfectly alike, but by losing sight of their distinguishing peculiarities, and limiting the attention to those attributes which belong to them in common. Indeed, without this power of attending separately to things which our senses present to us in a state of union, we never could have had any idea of *number*; for, before we can consider different objects as forming a multitude, it is necessary that we should be able to apply to all of them one common name; or, in other words, that we should reduce them all to the same genus. The various objects, for example, animate and inanimate, which are, at this moment, before me, I may class and number in a variety of different ways, according to the view of them that I choose to take. I may reckon successively the number of sheep, of cows, of horses, of elms, of oaks, of beeches; or I may first reckon the number of animals, and then the number of trees; or I may at once reckon the number of all the organized substances which my senses present to me. But whatever be the principle on which my classification proceeds, it is evident, that the objects numbered together, must be considered in those respects only in which they agree with each other; and that, if I had no power of separating the combinations of sense, I never could have conceived them as forming a plurality.

This power of considering certain qualities or attributes of an object apart from the rest; or, as I would rather choose to define it, the power which the understanding has, of separating the combinations which are presented to it, is distinguished by logicians by the name of *abstraction*. It has been supposed by some philosophers, (with what probability I shall not now inquire,) to form the characteristical attribute of a rational nature. That it is one of the most important of all our faculties, and very intimately connected with the exercise of our reasoning powers, is beyond dispute. And, I flatter myself, it will appear from the sequel of this chapter, how much the proper management of it conduces to the success of our philosophical pursuits, and of our general conduct in life.

The subserviency of Abstraction to the power of Reasoning, and also, its subserviency to the exertions of a Poetical or Creative Imagination, shall be afterwards fully illustrated. At present, it is sufficient for my purpose to remark, that as abstraction is the ground-work of classification, without this faculty of the mind we should have been perfectly incapable of general speculation, and all our knowledge must necessarily have been limited to individuals: and that some of the most useful branches of science, particularly the different branches of mathematics, in which the very subjects of our reasoning are abstractions of the understanding, could never have possibly had an existence. With respect to the subserviency of this faculty to poetical imagination, it is no less obvious, that, as the poet is supplied with all his materials by experience; and as his province is limited to combine and modify things which really exist, so as to produce new wholes of his own; so every exertion which he thus makes of his powers, presupposes the exercise of abstraction in decomposing and separating actual combinations. And it was on this account, that, in the chapter on Conception, I was led to make a distinction between that faculty, which is evidently simple and uncompounded, and the power of

Imagination, which (at least in the sense in which I employ the word in these inquiries) is the result of a combination of various other powers.

I have introduced these remarks, in order to point out a difference between the abstractions which are subservient to reasoning, and those which are subservient to imagination. And, if I am not mistaken, it is a *distinction* which has not been sufficiently attended to by some writers of eminence. In every instance in which imagination is employed in forming new wholes, by decompounding and combining the perceptions of sense, it is evidently necessary that the poet or the painter should be able to state to himself the circumstances abstracted, as separate objects of conception. But this is by no means requisite in every case in which abstraction *is* subservient to the power of reasoning; for it frequently happens, that we can reason concerning one quality or property of an object abstracted from the rest, while, at the same time, we find it impossible to conceive it separately. Thus, I can reason concerning extension and figure, without any reference to color; although it may be doubted, if a person possessed of sight can make extension and figure steady objects of conception, without connecting with them one color or another. Nor is this always owing (as it is in the instance now mentioned) merely to the association of ideas; for there are cases, in which we can reason concerning things separately, which it is impossible for us to suppose any being so constituted as to conceive apart. Thus, we can reason concerning length, abstracted from any other dimension; although, surely, no understanding can make *length*, without breadth, an object of conception. And, by the way, this leads me to take notice of an error, which mathematical teachers are apt to commit in explaining the first principles of geometry. By dwelling long on Euclid's first definitions, they lead the student to suppose that they relate to notions which are extremely mysterious, and to strain his powers in fruitless attempts to conceive, what cannot possibly be made an object of conception. If these definitions were omitted, or very slightly touched upon, and the attention at once directed to geometrical reasonings, the student would immediately perceive, that although the lines in the diagrams are really extended in two dimensions, yet that the demonstrations relate only to one of them; and that the human understanding has the faculty of reasoning concerning things separately, which are always presented to us, both by our powers of perception and conception, in a state of union. Such abstractions, in truth, are familiar to the most illiterate of mankind; and it is in this way that they are insensibly formed. When a tradesman speaks of the length of a room in contradistinction to its breadth; or when he speaks of the distance between any two objects, he forms exactly the same abstraction, which is referred to by Euclid in his second definition: and which most of his commentators have thought it necessary to illustrate by prolix metaphysical disquisitions.

I shall only observe farther, with respect to the nature and province of this faculty of the mind, that notwithstanding its essential subserviency to every act of classification, yet it might have been exercised, although we had only been acquainted with one individual object. Although, for example, we had never seen but one rose, we might still have been able to attend to its color, without thinking of its other properties. This has led some philosophers to suppose, that another faculty besides abstraction, to which they have given the name of generalization, is necessary to account for the formation of genera and species; and they have endeavoured to show, that although generalization without abstraction is impossible; yet that we might have been so formed, as to be able to abstract, without being capable of generalizing. The grounds of this opinion, it is not necessary for me to examine, for any of the purposes which I have at present in view.

SECTION II.

Of the Objects of our Thoughts, when we employ general Terms.

From the account which was given in a former chapter, of the common theories of perception, it appears to have been a prevailing opinion among philosophers, that the *qualities* of external objects are perceived, by means of images or species transmitted to the mind by the organs of sense: an opinion of which I already endeavoured to trace the origin, from certain natural prejudices suggested by the phenomena of the material world. The same train of thinking has led them to suppose that, in the case of all our other intellectual operations, there exist in the mind certain ideas distinct from the mind itself; and that these ideas are the objects about which our thoughts are employed. When I recollect, for example, the appearance of an absent friend, it is supposed that the immediate object of my thoughts is an *idea* of my friend; which I at first received by my senses, and which I have been enabled to retain in the mind by the faculty of memory. When I form to myself any imaginary combination by an effort of poetical invention, it is supposed, in like manner, that the parts which I combine, existed previously in the mind; and furnish the materials on which it is the province of imagination to operate. It is to Dr. Reid we owe the important remark, that all these notions are wholly hypothetical; that it is impossible to produce a shadow of evidence in support of them; and that, even although we were to admit their truth, they would not render the phenomena in question more intelligible. According to his principles, therefore, we have no ground for supposing, that, in any one operation of the mind, there exists in it an object distinct from the mind itself; and all the common expressions which involve such a supposition, are to be considered as unmeaning circumlocutions, which serve only to disguise from us the real history of the intellectual phenomena.*

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* In order to prevent misapprehensions of Dr. Reid's meaning, in his reason-

"We are at a loss to know," says this excellent philosopher, "how we perceive distant objects; how we remember things past; how we imagine things that have no existence. Ideas in the mind seem to account for all these operations; they are all by the means of ideas reduced to one operation; to a kind of feeling, or immediate perception of things present, and in contact with the percipient; and feeling is an operation so familiar, that we think it needs no explanation, but may serve to explain other operations."

"But this feeling, or immediate perception, is as difficult to be comprehended, as the things which we pretend to explain by it. Two things may be in contact, without any feeling or perception; there must therefore be in the percipient, a power to feel, or to perceive. How this power is produced, and how it operates, is quite beyond the reach of our knowledge. As little

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ings against the ideal theory, it may be necessary to explain, a little more fully than I have done in the text, in what sense he calls in question the existence of *ideas*; for the meaning which this word is employed to convey in popular discourse, differs widely from that which is annexed to it by the philosophers whose opinion he controverts. This explanation I shall give in his own words:

"In popular language, idea signifies the same thing as conception, apprehension, notion. To have an idea of any thing, is to conceive it. To have a distinct idea, is to conceive it distinctly. To have no idea of it, is not to conceive it at all.—When the word idea is taken in this popular sense, no man can possibly doubt whether he has ideas."

"According to the philosophical meaning of the word *idea*, it does not signify that act of the mind which we call thought, or conception, but some *object* of thought. Of these objects of thought called ideas, different sects of philosophers have given very different accounts."

"Some have held them to be self-existent; others to be in the divine mind; others in our own minds; and others in the brain, or sensorium." p. 213.

"The Peripatetic system of species and phantasms, as well as the Platonic system of ideas, is grounded upon this principle, that in every kind of thought, there must be some objects that really exists; in every operation of the mind, something to work upon. Whether this immediate object be called an idea with Plato, or a phantasm or species with Aristotle; whether it be eternal and uncreated, or produced by the impressions of external objects, is of no consequence in the present argument." Ibid p. 388.

"So much is this opinion fixed in the minds of philosophers, that, I doubt not but it will appear to most, a very strange paradox, or rather a contradiction, that men should think without ideas. But this appearance of contradiction arises from the ambiguity of the word idea. If the idea of a thing means only the thought of it, which is the most common meaning of the word, to think without ideas, is to think without thought; which is undoubtedly a contradiction. But an idea, according to the definition given of it by philosophers, is not thought, but an object of thought, which really exists, and is perceived," &c. Ibid. p. 390.

I have only to add, that when, in this work, I make use of the word idea in stating my own opinions, I employ it uniformly in the popular sense, and not in the philosophical sense, as now explained: it would be better, perhaps, to avoid it altogether; but I have found it difficult to do so, without adopting unusual modes of expression. I flatter myself that I have used it with due caution.

can we know, whether this power must be limited to things present, and in contact with us. Neither can any man pretend to prove, that the Being who gave us the power to perceive things present, may not give us the power to perceive things distant, to remember things past, and to conceive things that never existed."*

In another part of this work, Dr. Reid has occasion to trace the origin of the prejudice which has led philosophers to suppose, that, in all the operations of the understanding, there must be an object of thought, which really exists while we think of it. His remarks on this subject, which are highly ingenious and satisfactory, are contained in his account of the different theories concerning conception.†

As in all the ancient metaphysical systems it was taken for granted, (probably from the analogy of our external perceptions,) that every exertion of thought implies the existence of an object distinct from the thinking being; it naturally occurred, as a very curious question, What is the immediate object of our attention, when we are engaged in any general speculation; or, in other words, What is the nature of the idea corresponding to a general term? When I think of any particular object which I have formerly perceived, such as a particular friend, a particular tree, or a particular mountain, I can comprehend what is meant by a picture or representation of such objects; and therefore the explanation given by the ideal theory of that act of the mind which we formerly called Conception, if not perfectly satisfactory, is at least not wholly unintelligible. But what account shall we give, upon the principles of this theory, of the objects of my thoughts, when I employ the words, friend, tree, mountain, as generic terms? For, that all the things I have ever perceived are individuals, and consequently, that the ideas denoted by general words, (if such ideas exist,) are not copied from any originals that have fallen under my observation, is not only self-evident, but almost an identical proposition.

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* Essays on the Intellectual Powers, p. 214.

† Ibid. p. 378.

In answer to this question, the Platonists, and at a still earlier period, the Pythagoreans, taught, that, although these universal ideas are not copied from any objects perceivable by sense, yet that they have an existence independent of the human mind, and are no more to be confounded with the understanding, of which they are the proper objects, than material things are to be confounded with our powers of external perception; that as all the individuals which compose a genus, must possess something in common; and as it is in consequence of this, that they belong to that genus, and are distinguishable by the same name, this common thing forms the essence of each, and is the object of the understanding, when we reason concerning the genus.—They maintained also, that this common essence,* notwithstanding its inseparable union with a multitude of different individuals, is in itself one, and indivisible.

On most of these points, the philosophy of Aristotle seems to have coincided very nearly with that of Plato. The language, however, which these philosophers employed on this subject was different, and gave to their doctrines the appearance of a wider diversity than probably existed between their opinions. While Plato was led by his passion for the marvellous and the mysterious, to insist on the incomprehensible union of the same idea or essence, with a number of individuals, without multiplication or division; † Aristotle, more cautious, and aiming at greater perspicuity, contented himself with saying, that all individuals are composed of matter and form, and that it is in consequence of possessing a common form, that different individuals belong to the same genus. But they both agreed, that, as the matter, or the individual natures of objects were perceived by sense, so the general idea, or essence, or form, was perceived by the intellect; and that, as the attention of the vulgar was chiefly engrossed with the former, so the latter furnished to the philosopher the materials of his speculations.

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* In this very imperfect sketch of the opinions of the ancients concerning universals, I have substituted, instead of the word *idea*, the word *essence*, as better fitted to convey to a modern reader the true import of Plato's expressions. The word *essentia*, is said to have been first employed by Cicero; and it was afterwards adopted by the school-men, in the same sense in which the Platonists used the word *idea*. See *Dr. Reid's Essays on the Intellectual Powers*, p. 473.

† "The idea of a thing," says Plato, "is that which makes *one* of the *many*; which, preserving the unity and integrity of its own nature, runs through and mixes with things infinite in number; and yet, however multiform it may appear, is always the same: so that by it we find out and discriminate the thing, whatever shapes it may assume, and under whatever disguise it may conceal itself."—PLATO in PHILEBO; (quoted by the author of the *Origin and Progress of Language*, vol. i. p. 100, 2d edit.)

The chief difference between the opinions of Plato and Aristotle on the subject of ideas, related to the mode of their existence. That the matter of which all things are made existed from eternity, was a principle which both admitted; but Plato farther taught, that, of every species of things, there is an idea of form which also existed from eternity, and that this idea is the exemplar or model according to which the individuals of the species were made; whereas Aristotle held, that, although matter may exist without form, yet that forms could not exist without matter.*

The doctrine of the Stoics concerning universals differed widely from those both of Plato and Aristotle, and seems to have approached to a speculation which is commonly supposed to be of a more recent origin, and which an eminent philosopher of the present age has ranked among the discoveries which do the greatest honor to modern genius.†

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* In this account of the difference between Plato and Aristotle on the subject of ideas, I have chiefly followed Brucker, whose very laborious researches with respect to this article of the history of philosophy are well known. In stating the distinction, however, I have confined myself to as general terms as possible; as the subject is involved in much obscurity, and has divided the opinions of very eminent writers. The reader will find the result of Brucker's inquiries, in his own words, in Note (F.)

The authority of Brucker in this instance, has the more weight with me, as it coincides in the most material respects with that of Dr. Reid. See his *Essays on the Intellectual Powers of Man*, and the conclusion of his *Inquiry into the Human Mind*.

A very different account of Aristotle's doctrine, in those particulars in which it is commonly supposed to differ from that of Plato, is given by two modern writers of great learning, whose opinions are justly entitled to much respect, from their familiar acquaintance with Aristotle's latter Commentators of the Alexandrian School.--See *Origin and Progress of Language*, vol. i. and HARRIS's *Hermes*.

It is of no consequence, for any of the purposes which I have at present in view, what opinion we form on this much controverted point of philosophical history. In so far as the ideal theory was an attempt to explain the manner in which our general speculations are carried on, it is agreed on all hands, that the doctrines of Plato and Aristotle were essentially the same; and accordingly, what I have said on that subject, coincides entirely with a passage which the reader will find in *Origin and Progress of Language*, vol. i. p. 38, 2d edit.

† Treatise of Human Nature, book i. part i. sect. 7.

Whether this doctrine of the Stoics coincided entirely with that of the Nominalists, (whose opinions I shall afterwards endeavour to explain,) or whether it did not resemble more a doctrine maintained by another sect of school-men called Conceptualists, I shall not inquire. The determination of this question is interesting only to men of erudition, for the knowledge we possess of this part of the Stoical philosophy, is too imperfect to assist us in the farther prosecution of the argument, or even to diminish the merit of those philosophers who have, in modern times, been led to similar conclusions.*

As it is not my object, in this work, to enter into historical details, any farther than is necessary for illustrating the subjects of which I treat, I shall pass over the various attempts which were made by the Eclectic philosophers, (a sect which arose at Alexandria about the beginning of the third century,) to reconcile the doctrines of Plato and Aristotle concerning ideas. The endless difficulties, it would appear, to which their speculations led, induced, at last, the more cautious and modest inquirers to banish them entirely from Dialectics, and to content themselves with studying the arrangements or classifications of universals, which the ancient philosophers had made, without engaging in any metaphysical disquisitions concerning their nature. Porphyry, in particular, although he tells us, that he has speculated much on this subject, yet, in his Introduction to Aristotle's Categories, waves the consideration of it as obscure and intricate. On such questions as these; "Whether genera and species exist in nature, or are only conceptions of the Human Mind; and (on the supposition that they exist in nature) whether they are inherent in the objects of sense, or disjoined from them?" he declines giving any determination.

This passage in Porphyry's Introduction is an object of curiosity, as, by a singular concurrence of circumstances, it served to perpetuate the memory of a controversy from which it was the author's intention to divert the inquiries of his readers. Amidst the disorders produced by the irruptions of the Barbarians, the knowledge of the Greek tongue was almost entirely lost; and the studies of philosophers were confined to Latin versions of Aristotle's Dialectics, and of Porphyry's Introduction concerning the Categories. With men who had a relish for such disquisitions, it is probable that the passage already quoted from Porphyry, would have a tendency rather to excite than to damp curiosity; and accordingly we have reason to believe, that the controversy to which it relates continued, during the dark ages, to form a favorite subject of discussion. The opinion which was prevalent was, (to use the scholastic language of the times,) that universals do not exist *before* things, nor *after* things, but *in* things; that is, (if I may be allowed to attempt a commentary upon expressions to which I do not pretend to be able to annex very precise notions,) universal ideas have not (as Plato thought) an existence separable from individual objects, and, therefore, they could not have existed prior to them in the order of time; nor yet, (according to the doctrine of the Stoics,) are they mere conceptions of the mind, formed in consequence of an examination and comparison of particulars; but these ideas or forms are from eternity united inseparably with that matter of which things consist, or, as the Aristotelians sometimes express themselves, the forms of things are from eternity immersed in matter.—The reader will, I hope, forgive me, for entering into these details, not only on account of their connexion with the observations which are to follow, but as they relate to a controversy which, for many ages, employed all the ingenuity and learning in Europe; and which, therefore, however frivolous in itself, deserves the attention of philosophers, as one of the most curious events which occurs in the history of the Human Mind.

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* See Note (G.)

Such appears to have been the prevailing opinion concerning the nature of universals, till the eleventh century, when a new doctrine or (as some authors think) a doctrine borrowed from the school of Zeno, was proposed by Roscelinus;* and soon after very widely propagated over Europe by the abilities and eloquence of one of his scholars, the celebrated Peter Abelard. According to these philosophers, there are no existences in nature corresponding to general terms, and the objects of our attention in all our general speculations are not ideas, but words.

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* See Note (H.)

In consequence of this new doctrine, the school-men gradually formed themselves into two sects: one of which attached itself to the opinions of Roscelinus and Abelard, while the other adhered to the principles of Aristotle. Of these sects, the former are known in literary history by the name of the Nominalists; the latter by that of the Realists.

As it is with the doctrine of the Nominalists that my own opinion on this subject coincides; and as I propose to deduce from it some consequences, which appear to me important, I shall endeavour to state it as clearly and precisely as I am able, pursuing, however, rather the train of my own thoughts, than guided by the reasons of any particular author.

I formerly explained in what manner the words, which, in the infancy of language, were proper names, became gradually appellatives; in consequence of which extension of their signification, they would express, when applied to individuals, those qualities only which are common to the whole genus. Now, it is evident, that, with respect to individuals of the same genus, there are two classes of truths; the one, particular truths relating to each individual apart, and deduced from a consideration of its peculiar and distinguishing properties; the other, general truths, deduced from a consideration of their common qualities, and equally applicable to all of them. Such truths may be conveniently expressed, by means of general terms, so as to form propositions comprehending under them as many particular truths, as there are individuals comprehended under the general terms. It is farther evident, that there are two ways in which such general truths may be obtained; either by fixing the attention on one individual, in such a manner that our reasoning may involve no circumstances but those which are common to the whole genus; or, (laying aside entirely the consideration of things,) by means of the general terms with which language supplies us. In either of these cases, our investigations must necessarily lead us to general conclusions. In the first case, our attention being limited to those circumstances, in which the subject of our reasoning resembles all other individuals of the same genus, whatever we demonstrate with respect to this subject must be true of every other to which the same attributes belong. In the second case, the subject of our reasoning being expressed by a generic word, which applies in common to a number of individuals, the conclusion we form must be as extensive in its application, as the name of the subject is in its meaning. The former process is analogous to the practice of geometers, who, in their most general reasonings, direct the attention to a particular diagram: the latter, to that of algebraists, who carry on their investigations by means of symbols.* In cases of this last sort, it may frequently happen, from the association of ideas, that a general word may recall some one individual to which it is applicable; but this is so far from being necessary to the accuracy of our reasoning, that, excepting in some cases, in which it may be useful to check us in the abuse of general terms, it always has a tendency, more or less, to mislead us from the truth. As the decision of a judge must necessarily be impartial, when he is only acquainted with the relations in which the parties stand to each other, and when their names are supplied by letters of the alphabet, or by the fictitious names of Titius, Caius, and Sempronius, so, in every process of reasoning, the conclusion we form is most likely to be logically just, when the attention is confined solely to signs, and when the imagination does not present to it those individual objects which may warp the judgment by casual associations.

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* These two methods of obtaining general truths proceed on the same principles; and are, in fact, much less different from each other, than they appear to be at first view. When we carry on a process of general reasoning, by fixing our attention on a particular individual of a genus, this individual is to be considered merely as a sign or representative, and differs from any other sign only in this, that it bears a certain resemblance to the things it denotes.—The straight lines which are employed in the fifth book of Euclid to represent magnitudes in general, differ from the algebraical expressions of these magnitudes, in the same respects in which picture writing differs from arbitrary characters.

To these remarks, it may not be improper to add, that, although in our speculations concerning individuals, it is possible to carry on processes of reasoning, by fixing our attention on the objects themselves, without the use of language, yet it is also in our power to accomplish the same end, by substituting for these objects, words or other arbitrary signs. The difference between the employment of language in such cases, and in our speculations concerning classes or genera, is, that in the former case the use of words is, in a great measure, optional; whereas, in the latter, it is essentially necessary. This observation deserves our attention the more, that, if I am not mistaken, it has contributed to mislead some of the Realists, by giving rise to an idea, that the use of language, in thinking about universals, however convenient, is not more necessary than in thinking about individuals.

According to this view of the process of the mind, in carrying on general speculations, that IDEA which the ancient philosophers considered as the essence of an individual, is nothing more than the particular quality or qualities in which it resembles other individuals of the same class, and in consequence of which, a generic name is applied to it. It is the possession of this quality, that entitles the individual to the generic appellation, and which, therefore, may be said to be essential to its classification with that particular genus; but as all classifications are to a certain degree arbitrary, it does not necessarily follow, that it is more essential to its existence as an individual, than various other qualities which we are accustomed to regard as accidental. In other words, (if I may borrow the language of modern philosophy,) this quality forms its nominal, but not its real essence.

These observations will, I trust, be sufficient for the satisfaction of such of my readers as are at all conversant with philosophical inquiries. For the sake of others, to whom this disquisition may be new, I have added the following illustrations.

I shall have occasion to examine, in another part of my work, how far it is true, (as it is commonly believed,) that every process of reasoning may be resolved into a series of syllogisms, and to point out some limitations, with which, I apprehend, it is necessary that this opinion should be received. As it would lead me, however, too far from my present subject, to anticipate any part of the doctrine which I am then to propose, I shall, in the following remarks, proceed on the supposition, that the syllogistic theory is well founded; a supposition which although not strictly agreeable to truth, is yet sufficiently accurate for the use which I am now to make of it. Take, then, any step of one of Euclid's demonstrations; for example, the first step of his first proposition, and state it in the form of syllogism.—"All straight lines, drawn from the centre of a circle to the circumference, are equal to one another." "But A B, and C D, are straight lines, drawn from the centre of a circle to the circumference. Therefore A B is equal to C *D*."—*It* is perfectly manifest, that, in order to feel the force of this conclusion, it is by no means necessary, that I should annex any particular notions to the letters A B, or C D, or that I should comprehend what is meant by *equality*, or by a *circle*, its *centre*, and its *circumference*. Every person must be satisfied, that the truth of the conclusion is necessarily implied in that of the two premises; whatever the particular things may be to which these premises may relate. In the following syllogism, too:—"All men must die;—Peter is a man;—therefore Peter must die;"—the evidence of the conclusion does not in the least depend on the particular notions I annex to the words *man*, and *Peter*; but would be equally complete, if we were to substitute instead of them, two letters of the alphabet, or any other insignificant characters.—"All X's must die;—Z is an X;—therefore Z must die;"—is a syllogism which forces the assent no less than the former. It is farther obvious, that this syllogism would be equally conclusive, if, instead of the word *die*, I were to substitute any other verb that the language contains; and, that, in order to perceive the justness of the inference, it is not even necessary that I should understand its meaning.

In general, it might be easily shown, that all the rules of logic, with respect to syllogisms, might be demonstrated, without having recourse to any thing but letters of the alphabet; in the same manner, (and I may add, on the very same principles,) on which the algebraist demonstrates, by means of these letters, the various rules for transposing the terms of an equation.

From what has been said, it follows, that the assent we give to the conclusion of a syllogism does not result from any examination of the notions expressed by the different propositions of which it is composed, but is an immediate consequence of the relations in which the words stand to each other. The truth is, that in every syllogism, the inference is only a particular instance of the general axiom, that whatever is true universally of any sign, must also be true of every individual which that sign can be employed to express. Admitting, therefore, that every process of reasoning may be resolved into a series of syllogisms, it follows, that this operation of the mind furnishes no proof of the existence of any thing corresponding to general terms, distinct from the individuals to which these terms are applicable.

These remarks, I am very sensible, do by no means exhaust the subject, for there are various modes of reasoning, to which the syllogistic theory does not apply. But, in all of them, without exception, it will be found, on examination, that the evidence of our conclusions appears immediately from the consideration of the words in which the premises are expressed; without any reference to the things which they denote. The imperfect account which is given of deductive evidence, in the received systems of logic, makes it impossible for me, in this place, to prosecute the subject any farther.

After all that I have said on the use of language as an instrument of reasoning, I can easily foresee a variety of objections, which may occur to the doctrine I have been endeavouring to establish. But, without entering into a particular examination of these objections, I believe I may venture to affirm, that most, if not all of them take their rise from confounding reasoning, or deduction, properly so called, with certain other intellectual processes, which it is necessary for us to employ in the investigation of truth. That it is frequently of essential importance to us, in our speculations, to withdraw our attention from words, and to direct it to the things they denote, I am very ready to acknowledge. All that I assert is, that, in so far as our speculations consist of that process of the mind which is properly called reasoning, they may be carried on by words *alone; or, which* comes to the same thing, that every process of reasoning is perfectly analogous to an algebraical operation. What I mean by "the other intellectual processes distinct from reasoning, which it is necessary for us sometimes to employ in the investigation of truth," will, I hope, appear clearly from the following remarks.

In algebraical investigations, it is well known, that the *practical* application of a general expression, is *frequently limited* by the conditions which the hypothesis involves; and that, in consequence of a want of attention to this circumstance, some mathematicians of the first eminence have been led to adopt the most paradoxical and absurd conclusions. Without this cautious exercise of the judgment in the interpretation of the algebraical language, no dexterity in the use of the calculus will be sufficient to preserve us from error. Even in algebra, *therefore*, there is an application of the intellectual powers perfectly distinct from any process of reasoning, and which is absolutely necessary for conducting us to the truth.

In geometry, we are not liable to adopt the same paradoxical conclusions, as in algebra, because the diagrams to which our attention is directed, serve as a continual check on our reasoning powers. These diagrams exhibit to our very senses, a variety of relations among the quantities under consideration, which the language of algebra is too general to express; in consequence of which, we are not conscious of any effort of the judgment distinct from a process of reasoning. As every geometrical investigation, however, may be expressed algebraically, it is manifest, that, in geometry, as well as in algebra, there is an exercise of the intellectual powers, distinct from the logical process; although, in the former science, it is rendered so easy, by the use of diagrams, as to escape our attention.

The same source of error and of absurdity, which exists in algebra, is to be found, in a much greater degree, in the other branches of knowledge. Abstracting entirely from the ambiguity of language, and supposing also our reasonings to be logically accurate, it would still be necessary for us, from time to time, in all our speculations, to lay aside the use of words, and to have recourse to particular examples, or illustrations, in order to correct and to limit our general conclusions.—To a want of attention to this circumstance, a number of the speculative absurdities which are current in the world, might, I am persuaded, be easily traced.

Besides, however, this source of error, which is in some degree common to all the sciences, there is a great variety of others, from which mathematics are entirely exempted, and which perpetually tend to lead us astray in our philosophical inquiries. Of these, the most important is, that ambiguity in the signification of words, which renders it so difficult to avoid employing the same expressions in different senses, in the course of the same process of reasoning. This source of mistake, indeed, is apt, in a much greater degree, to affect our conclusions in metaphysics, morals, and politics, than in the different branches of natural philosophy; but if we except mathematics, there is no science whatever, in which it has not a very sensible influence. In algebra, we may proceed with perfect safety through the longest investigations, without carrying our attention beyond the signs, till we arrive at the last result. But in the other sciences, excepting in those cases in which we have fixed the meaning of all our terms by accurate definitions, and have rendered the use of these terms perfectly familiar to us by very long habit, it is but seldom that we can proceed in this manner without danger of error. In many cases it is necessary for us to keep up, during the whole of our investigations, a scrupulous and constant attention to the signification of our expressions; and, in most cases, this caution in the use of words, is a much more difficult effort of the mind, than the logical process. But still this furnishes no exception to the general doctrine already delivered; for the attention we find it necessary to give to the import of our words, arises only from the accidental circumstance of their ambiguity, and has no essential connexion with that process of the mind, which is properly called reasoning, and which consists in the inference of a conclusion from premises. In all the sciences, this process of the mind is perfectly analogous to an algebraical operation; or, in other words, (when the meaning of our expressions is once fixed by definitions,) it may be carried on entirely by the use of signs, without attending, during the time of the process, to the things signified.

The conclusion to which the foregoing observations lead, appears to me to be decisive of the question, with respect to the objects of our thoughts when we employ general terms; for if it be granted, that words, even when employed without any reference to their particular signification, form an instrument of thought sufficient for all the purposes of reasoning, the only shadow of an argument in proof of the common doctrine on the subject, (I mean that which is founded on the impossibility of explaining this process of the mind on any other hypothesis,) falls to the ground. Nothing less, surely, than a conviction of this impossibility, could have so long reconciled philosophers to an hypothesis unsupported by any direct evidence, and acknowledged even by its warmest defenders, to involve much difficulty and mystery.

It does not fall within my plan, to enter, in this part of my work, into a particular consideration of the practical consequences which follow from the foregoing doctrine. I cannot, however, help remarking the importance of cultivating, on the one hand, a talent for ready and various illustration, and, on the other, a habit of reasoning by means of general terms. The former talent is necessary, not only for correcting and limiting our general conclusions, but for enabling us to apply our knowledge, when occasion requires, to its real practical use. The latter serves the double purpose, of prevent-ing our attention from being distracted during the course of our reasonings, by ideas which are foreign to the point in question, and of diverting the attention from those conceptions of particular objects and particular events, which might disturb the judgment, by the ideas and feelings which are apt to be associated with them, in consequence of our own casual experience.

This last observation points out to us, also, one principal foundation of the art of the orator. As his object is not so much to inform and to satisfy the understandings of his hearers, as to force their immediate assent; it is frequently of use to him to clothe his reasonings in that specific and figurative language which may either awaken in their minds associations favorable to his purpose. or may divert their attention from a logical examination of his argument. A process of reasoning so expressed, affords at once an exercise to the judgment, to the imagination, and to the passions; and is apt, even when loose and inconsequential, to impose on the best understandings.

It appears farther from the remarks which have been made, that the perfection of philosophical language, considered either as an instrument of thought, or as a medium of communication with others, consists in the use of expressions, which, from their generality, have no tendency to awaken the powers of conception and imagination; or, in other words, it consists in its approaching, as nearly as possible, in its nature, to the language of algebra. And hence the effects which long habits of philosophical speculation have, in weakening, by disuse, those faculties of the mind, which are necessary for the exertions of the poet and the orator, and of gradually forming a style of composition, which they who read merely for amusement, are apt to censure for a want of vivacity and of ornament.

SECTION III.

Remarks on the Opinions of some modern Philosophers on the Subject of the foregoing Section.

After the death of Abelard, through whose abilities and eloquence the sect of Nominalists had enjoyed, for a *few years*, a very splendid triumph, the system of the Realists began to revive; and it was soon so completely re-established in the schools, as to prevail, with little or no opposition, till the fourteenth century. What the circumstances were, which led philosophers to abandon a doctrine, which seems so strongly to recommend itself by its simplicity, it is not very easy to conceive. Probably the heretical opinions, which had subjected both Abelard and Roscelinus to the censure of the church, might create a prejudice also against their philosophical principles; and probably too, the manner in which these principles were stated and defended, was not the clearest, nor the most satisfactory.* The principal cause, however, I am disposed to think, of the decline of the sect of Nominalists, was their want of some palpable example, by means of which they might illustrate their doctrine. It is by the use which algebraists make of the letters of the alphabet in carrying on their operations, that Leibnitz and Berkeley have been most successful in explaining the use of language as an instrument of thought: and as, in the twelfth century, the algebraical art was entirely unknown, Roscelinus and Abelard must have been reduced to the necessity of conveying their leading idea by general circumlocutions, and must have found considerable difficulty in stating it in a manner satisfactory to themselves: a consideration, which, if it accounts for the slow progress which this doctrine made in the world, places in the more striking light, the genius of those men, whose sagacity led them, under so great disadvantages, to approach to a conclusion so just and philosophical in itself, and so opposite to the prevailing opinions of their age.

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* The great argument which the Nominalists employed against the existence of universals was: "Entia non sunt multiplicanda præter necessitatem."

In the fourteenth century, this sect seems to have been almost completely extinct; their doctrine being equally reprobated by the two great parties which then divided the schools, the followers of Duns Scotus and of Thomas Aquinas. These, although they differed in their manner of explaining the nature of universals, and opposed each other's opinions with much asperity, yet united in rejecting the doctrine of the Nominalists, not only as absurd, but as leading to the most dangerous consequences. At last, William Occam, a native of England, and a scholar of Duns Scotus, revived the ancient controversy, and with equal ability and success vindicated the long abandoned philosophy of Roscellinus. From this time the dispute was carried on with great warmth, in the universities of France, of Germany, and of England: more particularly in the two former countries, where the sovereigns were led, by some political views, to interest themselves deeply in the contest, and even to employ the civil power in supporting their favorite opinions. The emperor Lewis of Bavaria, in return for the assistance which, in his disputes with the Pope,* Occam had given to him by his writings, sided with the Nominalists. Lewis the Eleventh of France, on the other hand, attached himself to the Realists, and made their antagonists the objects of a cruel persecution.†

The protestant reformation, at length, involved men of learning in discussions of a more interesting nature; but even the zeal of theological controversy could hardly exceed that with which the Nominalists and Realists had for some time before maintained their respective doctrines. "Clamores primum ad ravim," says an author who had himself been an eye-witness of these literary disputes, "hinc improbitas, sannæ, minæ, convitia, dum luctantur, et uterque alterum tentat prosternere: consumtis verbis venitur ad pugnos, ad veram luctam ex fictâ et simulatâ. Quin etiam, quæ contingunt in palæstrâ, illic non desunt, colaphi, alapæ, consputio, calces, morsus, etiam quæ jam supra leges palæstræ, fustes, ferrum, saucii multi, nonnunquam occisi."[*] That this account is not exaggerated, we have the testimony of no less an author than Erasmus, who mentions it as a common occurrence: "Eos usque ad pallorem, usque ad convitia, usque ad sputa, nonnunquam et usque ad pugnos invice digladiari, alios ut Nominales, alios ut Reales, loqui."[†]

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* Occam, we are told, was accustomed to say to the emperor: "Tu me defendas gladio, et ego te defendam calamo." BRUCKER, vol. iii. p. 848.

† MOSHEIM's Ecclesiastical History.

The dispute to which the foregoing observations relate, although, for some time after the Reformation, interrupted by theological disquisitions, has been since occasionally revived by different writers; and, singular as it may appear, it has not yet been brought to a conclusion in which all parties are agreed. The names, indeed, of Nominalists and Realists exist no longer; but the point in dispute between these two celebrated sects, coincides precisely with a question which has been agitated in our own times, and which has led to one of the most beautiful speculations of modern philosophy.

Of the advocates who have appeared for the doctrine of the Nominalists, since the revival of letters, the most distinguished are Hobbes, Berkeley, and Hume. The first has, in various parts of his works, reprobated the hypothesis of the Realists; and has stated the opinions of their antagonists with that acuteness, simplicity, and precision, which distinguish all his writings.[‡] The second, considering (and, in my opinion, justly) the doctrines of the ancients concerning universals, in support of which so much ingenuity had been employed by the Realists, as the great source of mystery and error in the abstract sciences, was at pains to overthrow it completely, by some very ingenious and original speculations of his own. Mr. Hume's[*] view of the subject, as he himself acknowledges, does not differ materially from that of Berkeley; whom, by the way, he seems to have regarded as the author of an opinion, of which he was only an expositor and defender, and which, since the days of Roscelinus and Abelard, has been familiarly known in all the universities of Europe.[†]

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[*] *Ludovicus Vives.*

[†] The Nominalists procured the death of John Huss, who was a Realist; and in their letter to Lewis, King of France, do not pretend to deny that he fell a victim to the resentment of their sect. The Realists, on the other hand, obtained, in the year 1479, the condemnation of John de Wasalia, who was attached to the party of the Nominalists. These contending sects carried their fury so far as to charge each other with "the sin against the Holy Ghost." Mosheim's *Ecclesiastical History.*

[‡] "The universality of one name to many things, hath been the cause that men think the things themselves are universal; and so seriously contend, that besides Peter and John, and all the rest of the men that are, have been, or shall be, in the world, there is yet something else, that we call man, viz. Man in general; deceiving themselves, by taking the universal, or general appellation, for the thing it signifieth: For if one should desire the painter to make him the picture of a man, which is as much as to say, of a man in general; he meaneth no more, but that the painter should choose what man he pleaseth to draw, which must needs be some of them that are, or have been, or may be: none of which are universal. But when he would have him to draw the picture of the king, or any other particular person, he limiteth the painter to that one person he chooseth. It is plain therefore, that there is nothing universal but names; which are

Notwithstanding, however, the great merit of these writers, in defending and illustrating the system of the Nominalists, none of them seem to me to have been fully aware of the important consequences to which it leads. The Abbé de Condillac was, I believe, the first (if we except, perhaps, Leibnitz) who perceived that, if this system be true, a talent for reasoning must consist, in a great measure, in a skilful use of language as an instrument of thought. The most valuable of his remarks on this subject are contained in a treatise *De l'Art d'Penser*, which forms the fourth volume of his "Cours d'Etude."

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therefore called indefinite, because we limit them not ourselves, but leave them to be applied by the hearer: whereas a singular name is limited and restrained to one of the many things it signifieth; as when we say, this man, pointing to him, or giving him his proper name, or by some such other way." HOBBES's *Tripos*, chap. v. § 6.

[*] "A very material question has been started concerning abstract or general ideas: Whether they be general or particular in the mind's conception of them? A great philosopher has disputed the received opinion in this particular; and has asserted, that all general ideas are nothing but particular ones annexed to a certain term, which gives them a more extensive signification, and makes them recall, upon occasion, other individuals, which are similar to them. As I look upon this to be one of the greatest and most valuable discoveries that have been made of late years in the republic of letters, I shall here endeavour to confirm it by some arguments, which, I hope, will put it beyond all doubt and controversy." *Treatise of Human Nature*, book, i. part i. § 7.

[†] Leibnitz, too, has declared himself a partizan of this sect, in a dissertation "De Stilo Philosophico Marii Nizolii." This Nizolius published a book at Parma, in the year 1553, entitled, "De Veris Principiis et Verâ Ratione Philosophandi;" in which he opposed several of the doctrines of Aristotle, particularly his opinion concerning universals. An edition of this work, with a Preface and Notes, was published by Leibnitz at Frankfort, in the year 1670. The Preface and Notes are to be found in the fourth volume of his works by Dutens. (Geneva, 1768). I have inserted a short extract from the former, in Note (I) at the end of the volume.

Dr. Campbell, too, in his Philosophy of Rhetoric, has founded, on the principles of Berkely and Hume, a very curious and interesting speculation, of which I shall have occasion afterwards to take notice.

The explanation which the doctrines of these writers afford of the process of the mind in general reasoning, is so simple, and at the same time, in my apprehension, so satisfactory, that, I own, it is with some degree of surprise I have read the attempts which have lately been made to revive the system of the Realists. One of the ablest of these attempts is by Dr. Price; who, in his very valuable Treatise on Morals, has not only employed his ingenuity in support of some of the old tenets of the Platonic School, but has even gone so far as to follow Plato's example, in connecting this speculation about universals, with the sublime questions of natural theology. The observations which he has offered in support of these opinions, I have repeatedly perused with all the attention in my power; but without being able to enter into his views, or even to comprehend fully his meaning. Indeed, I must acknowledge, that it appears to me to afford no slight presumption against the principles on which he proceeds, when I observe, that an author, remarkable, on most occasions, for precision of ideas, and for perspicuity of style, never fails to lose himself in obscurity and mystery, when he enters on these disquisitions.

Dr. Price's reasonings in proof of the existence of universals are the more curious, as he acquiesces in some of Dr. Reid's conclusions with respect to the ideal theory of perception. That there are in the mind images or resemblances of things external, he grants to be impossible; but still he seems to suppose, that, in every exertion of thought, there is *something* immediately present to the mind, which is the object of its attention. "When abstract truth is contemplated, is not," says he, "the very object itself present to the mind? When millions of intellects contemplate the equality of every angle of a semicircle to a right angle, have they not all the same object in view? Is this object nothing? Or is it only an image, or kind of shadow? These inquiries," he adds, "carry our thoughts high." *

The difficulty which has appeared so puzzling to this ingenious writer, is, in truth, more apparent than real. In the case of Perception, Imagination, and Memory, it has been already fully shown, that we have no reason to believe the existence of any thing in the mind distinct from the mind itself; and that, even upon the supposition that the fact were otherwise, our intellectual operations would be just as inexplicable as they are at present. Why then should we suppose, that, in our general speculations there must exist in the mind some object of its thoughts, when it appears that there is no evidence of the existence of any such object, even when the mind is employed about individuals?

Still, however, it may be urged, that, although, in such cases, there should be no object of thought in the mind, there must exist something or other to which its attention is directed. To this difficulty I have no answer to make, but by repeating the fact which I have already endeavoured to establish, that there are only two ways in which we can possibly speculate about classes of objects; the one, by means of a word or generic term; the other, by means of one particular individual of the class which we consider as the representative of the rest; and that these two methods of carrying on our general speculations, are at bottom so much the same, as to authorize us to lay down as a principle, that, without the use of signs, all our thoughts must have related to individuals. When we reason, therefore, concerning

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* The whole passage is as follows: "The word *idea* is sometimes used to signify the immediate object of the mind in thinking, considered as something in the mind, which represents the real object, but is different from it. This sense of an idea is derived from the notion, that when we think of any external existence, there is something immediately present to the mind, which it contemplates distinct from the object itself, that being at a distance. But what is this? It is bad language to call it an image in the mind of the object. Shall we say then, that there is indeed no such thing? But would not this be the same as to say that, when the mind is employed in viewing and examining any object, which is either not present to it, or does not exist, it is employed in viewing and examining nothing, and therefore does not then think at all?---When abstract truth is contemplated, is not the very object itself present to the mind? When millions of intellects contemplate the equality of every angle in a semicircle to a right angle, have they not all the same object in view? Is this object nothing? Or is it only an image or kind of shadow?---These inquiries carry our thoughts high."

classes or genera, the objects of our attention are merely signs; or if, in any instance the generic word should recall some individual, this circumstance is to be regarded only as the consequence of an accidental association, which has rather a tendency to disturb, than to assist us in our reasoning.

Whether it might not have been possible for the Deity to *have* so formed us, that we might have been capable of reasoning concerning classes of objects, without the use of signs, I shall not take upon me to determine. But this we may venture to affirm with confidence, that man is not such a being. And, indeed, even if he were, it would not therefore necessarily follow, that there exists any thing in a genus, distinct from the individuals of which it is composed; for we know that the power, which we *have*, of thinking of particular objects without the medium of signs, does not in the least depend on their existence or non-existence at the moment we think of them.

It would be vain, however, for us, in inquiries of this nature, to indulge ourselves in speculating about possibilities. It is of more consequence to remark the advantages which we derive from our actual constitution; and which, in the present instance, appear to me to be important and admirable: inasmuch as it fits mankind for an easy interchange in their intellectual acquisitions, by imposing on them the necessity of employing, in their solitary speculation, the same instrument of thought, which forms the established medium of their communications with each other.

In the very slight sketch which I have given of the controversy between the Nominalists and the Realists about the existence of universals, I have taken no notice of an intermediate sect called Conceptualists; whose distinguishing tenet is said to have been, that the mind has a power of forming general conceptions.* From

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* "Nominales, desertâ paulo Abelardi hypothesi, universalia in notionibus atque conceptibus mentis ex rebus singularibus abstractione formatis consistere statuebant, unde conceptuales dicti sunt." BRUCKER, vol. iii. p. 908. (Lips. 1766.)

"Nominalium tres erant familiæ. Aliqui ut Roscelinus, universalia meras esse voces docuerunt. Alii iterum in solo intellectu posuerunt, atque meros animi conceptus esse autumârunt, quos conceptuales aliqui vocant, et a nominalibus distinguunt, quanquam alii etiam confundant. Alii fuerunt, qui universalia quæsi-

the indistinctness and inaccuracy of their language on the subject, it is not a very easy matter to ascertain precisely what was their opinion on the point in question; but, on the whole, I am inclined to think, that it amounted to the two following propositions: first, that we have no reason to believe the existence of any essences, or universal ideas, corresponding to general terms; and, secondly, that the mind has the power of reasoning concerning *genera*, or classes of individuals, *without the mediation of language*. Indeed, I cannot think of any other hypothesis which it is possible to form on the subject, distinct from those of the two celebrated sects already mentioned. In denying the existence of universals, we know that the Conceptualists agreed with the Nominalists. In what, then, can we suppose that they differed from them, but about the necessity of language as an instrument of thought, in carrying on our general speculations?

With this sect of Conceptualists, Dr. Reid is disposed to rank Mr. Locke; and I agree with him so far as to think, that, if Locke had any decided opinion on the point in dispute, it did not differ materially from what I have endeavoured to express in the two general propositions which I have just now stated. The apparent inconsistencies which occur in that part of his Essay in which the question is discussed, have led subsequent authors to represent his sentiments in different lights; but as these inconsistencies plainly show, that he was neither satisfied with the system of the Realists, nor with that of the Nominalists, they appear to me to demonstrate that he leaned to the intermediate hypothesis already mentioned, notwithstanding the inaccurate and paradoxical manner in which he has expressed it.*

May I take the liberty of adding, that Dr. Reid's own opinion seems to me also to coincide nearly with that of the Conceptualists: or, at least, to coincide with the

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verunt, non tam in vocibus, quàm in sermonibus integris, quod Joh. Sarisberiensis adscribit Pet. Abelardo; quo quid intelligat ille, mihi non satis liquet." MORHOF, *Polyhistor*, Tom. Sec. lib. i. cap. xiii. § 2.

I have taken no notice of the last class of Nominalists here mentioned: as I find myself unable to comprehend their doctrine.

* See Note (K.)

two propositions which I have already supposed to contain a summary of their doctrine? The absurdity of the ancient opinion concerning universals, as maintained both by Plato and Aristotle, he has exposed by the clearest and most decisive arguments; not to mention that by his own very original and important speculations concerning the ideal theory, he has completely destroyed *that natural* prejudice from which the whole system of universal ideas gradually took rise. If, even in the case of individuals, we have no reason to believe the existence of any object of thought in the mind, distinct from the mind itself, we are at once relieved from all the difficulties in which philosophers have involved themselves, by attempting to explain, in consistency with that *ancient hypothesis*, the process of the mind in its *general speculations*.

On the other hand, it is no less clear, from Dr. Reid's criticisms on Berkeley and Hume, that his opinion does not coincide with that of the Nominalists; and that the power which the mind possesses of reasoning concerning classes of objects, appears to him to imply some faculty, of which no notice is taken in the systems of these philosophers.

The long experience I have had of the candor of this excellent author, encourages me to add, that in stating his opinion on the subject of universals, he has not expressed himself in a manner so completely satisfactory to my mind, as on most other occasions. That language is not an essential instrument of thought in our general reasonings, he has no where positively asserted. At the same time, as he has not affirmed the contrary, and as he has declared himself dissatisfied with the doctrines of Berkeley and Hume, his readers are naturally led to conclude, that this is his real opinion on the subject. His silence on this point is the more to be regretted, as it is the only point about which there can be any reasonable controversy among those who allow his refutation of the ideal hypothesis to be satisfactory. In consequence of that refutation, the whole dispute between the Realists and the Conceptualists falls at once to the ground; but the dispute between the Conceptualists and the Nominalists (which involves the great question concerning the use of signs in general speculation) remains on the same footing as before.

In order to justify his own expressions concerning universals, and in opposition to the language of Berkeley and Hume, Dr. Reid is at pains to illustrate a distinction between conception and imagination, which, he thinks, has not been sufficiently attended to by philosophers. "An universal," says he, "is not an object of any external sense, and therefore cannot be imagined; but it may be distinctly conceived. When Mr. Pope says, 'The proper study of mankind is man;' I conceive his meaning distinctly; although I neither imagine a black or a white, a crooked or a straight man. I can conceive a thing that is impossible; but I cannot distinctly imagine a thing that is impossible. I can conceive a proposition or a demonstration, but I cannot imagine either. I can conceive understanding and will, virtue and vice, and other attributes of the mind; but I cannot imagine them. In like manner, I can distinctly conceive universals; but I cannot imagine them."*

It appears from this passage, that, by conceiving universals, Dr. Reid means nothing more than understanding the meaning of propositions involving general terms. But the observations he has made (admitting them in their full extent) do not in the least affect the question about the necessity of signs, to enable us to speculate about such propositions. The vague use which metaphysical writers have made of the word *conception*, (of which I had occasion to take notice in a former chapter,) has contributed in part to embarass this subject. That we cannot conceive universals in a way at all analogous to that in which we conceive an absent object of sense, is granted on both sides. Why then should we employ the same word *conception*, to express two operations of the mind which are essentially different. When we speak of conceiving or understanding a general proposition, we mean nothing more than that we have a conviction, (founded on our previous use of the words in which it is expressed,) that we have it in our power, at pleasure, to substitute, instead of the general terms, some one of the individuals comprehended under them. When we hear a proposition announced, of which the terms are not familiar to us, we naturally desire to have it exemplified, or illustrated, by means of some particular instance; and when we are once satisfied by such an *application*, that we have the interpretation of the proposition at all times in our power, we make no scruple to say, that we conceive or understand its meaning; although we should not extend our views beyond the words in which it is announced, or even although no particular exemplification of it should occur to us at the moment. It is in this sense only, that the terms of any general *proposition* can possibly be understood; and therefore Dr. Reid's argument does not, in the least, invalidate the doctrine of the Nominalists, that, without the use of language, (under which term I comprehend every species of signs,) we should never have been able to extend our speculations beyond individuals.

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* Page 482.

That, in many cases, we may safely employ in our reasonings general terms, the meaning of which we are not even able to interpret in this way, and consequently, which are to us wholly insignificant, I had occasion already to demonstrate, in a former part of this section.

SECTION IV.

Continuation of the same Subject.—Inferences with respect to the Use of Language as an Instrument of Thought, and the Errors in Reasoning to which it occasionally gives rise.

In the last Section, I mentioned Dr. Campbell, as an ingenious defender of the system of the Nominalists, and I alluded to a particular application which he has made of their doctrine. The reasonings which I had then in view are to be found in the seventh chapter of the second book of his *Philosophy of Rhetoric*; in which chapter he proposes to explain, how it happens "that nonsense so often escapes being detected, both by the writer and the reader." The title is somewhat ludicrous in a grave philosophical work, but the disquisition to which it is prefixed, contains many acute and profound remarks on the nature and power of signs, both as a medium of communication, and as an instrument of thought.

Dr. Campbell's speculations with respect to language as an instrument of thought, seem to have been suggested by the following passage in Mr. Hume's Treatise of Human Nature. "I believe, every one who examines the situation of his mind in reasoning, will agree with me, that we do not annex distinct and complete ideas to every term we make use of; and that in talking of Government, Church, Negotiation, Conquest, we seldom spread out in our minds all the simple ideas of which these complex ones are composed. It is, however, observable, that, notwithstanding this imperfection, we may avoid talking nonsense on these subjects; and may perceive any repugnance among the ideas, as well as if we had a full comprehension of them. Thus if, instead of saying, that, in war, the weaker have always recourse to negotiation, we should say, that they have always recourse to conquest; the custom which we have acquired, of attributing certain relations to ideas, still follows the words, and makes us immediately perceive the absurdity of that proposition."

In the remarks which Dr. Campbell has made on this passage, he has endeavoured to explain in what manner our habits of thinking and speaking, gradually establish in the mind such relations among the words we employ, as enable us to carry on processes of reasoning by means of them, without attending in every instance to their particular signification. With most of his remarks on this subject I perfectly agree, but the illustrations he gives of them, are of too great extent to be introduced here, and I would not wish to run the risk of impairing their perspicuity, by attempting to abridge them. I must therefore refer such of my readers as wish to prosecute the speculation, to his very ingenious and philosophical treatise.

"In consequence of these circumstances," says Dr. Campbell, "it happens that, in matters which are perfectly familiar to us, we are able to reason by means of words, without examining, in every instance, their signification. Almost all the possible applications of the terms (in other words, all the acquired relations of the signs) have become customary to us. The consequence is, that an unusual application of any term is instantly detected; this detection breeds doubt, and this doubt occasions an immediate recourse to ideas. The recourse of the mind, when in any degree puzzled with the signs, to the knowledge it has of the things signified, is natural, and on such subjects perfectly easy. And of this recourse the discovery of the meaning, or of the unmeaningness of what is said, is the immediate effect. But in matters that are by no means familiar, or are treated in an uncommon manner, and in such as are of an abstruse and intricate nature, the case is widely different." The instances in which we are chiefly liable to be imposed on by words without meaning are (according to Dr. Campbell) the three following:

First, Where there is an exuberance of metaphor.

Secondly, When the terms most frequently occurring, denote things which are of a complicated nature, and to which the mind is not sufficiently familiarized. Such are the words, Government, Church, State, Constitution, Polity, Power, Commerce, Legislature, Jurisdiction, Proportion, Symmetry, Elegance.

Thirdly, When the terms employed are very abstract, and consequently, of very extensive signification.[*] For an illustration of these remarks, I must refer the reader to the ingenious work which I just now quoted.

To the observations of these eminent writers, I shall take the liberty of adding, that we are doubly liable to the mistakes they mention, when we make use of a language which is not perfectly familiar to us. Nothing, indeed, I apprehend, can show more clearly the use we make of words in reasoning than this, that an observation which, when expressed in our own language, seems trite or frivolous, often acquires the appearance of depth and originality, by being translated into another. For my own part, at least, I am conscious of having been frequently led, in this way, to form an exaggerated idea of the merits of ancient and of foreign authors; and it has happened to me more than once, that a sentence, which seemed at first to contain something highly ingenious and profound, when translated into words familiar to me, appeared obviously to be a trite or a nugatory proposition.

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[*] "The more general any word is in its signification, it is the more liable to be abused by an improper or unmeaning application. A very general term is applicable alike to a multitude of different individuals, a particular term is applicable but to a few. When the rightful applications of a word are extremely numerous, they cannot all be so strongly fixed by habit, but that, for greater security, we must perpetually recur in our minds from the sign to the notion we have of the thing signified; and for the reason aforementioned, it is in such instances difficult precisely to ascertain this notion. Thus the latitude of a word, though different from its ambiguity, hath often a similar effect."—*Philosophy of Rhetoric*, vol. ii. p. 122.

The effect produced by an artificial and inverted style in our own language, is similar to what we experience when we read a composition in a foreign one. The eye is too much dazzled to see distinctly. "Aliud styli genus," says Bacon, "totum in eo est, ut verba sint aculeata, sententiæ concisæ, oration denique, potius versa quam fusa, quo fit, ut omnia, per hujusmodi artificium, magis ingeniosa videantur quam re verâ sint. Tale invenitur in Seneca effutius, in Tacito et Plinio secundo moderatius."

The deranged collocation of the words in Latin composition, aids powerfully the imposition we have now been considering, and renders that language an inconvenient medium of philosophical communication, as well as an inconvenient instrument of accurate thought. Indeed, in all languages in which this latitude in the arrangement of words is admitted, the associations among words must be looser, than where one invariable order is followed; and of consequence, on the principles of Hume and Campbell, the mistakes which are committed in reasonings expressed in such languages, will not be so readily detected.

The errors in reasoning, to which we are exposed in consequence of the use of words as an instrument of thought, will appear the less surprising, when we consider that all the languages which have hitherto existed in the world, have derived their origin from popular use; and that their application to philosophical purposes, was altogether out of the view of those men who first employed them. Whether it might not be possible to invent a language, which would at once facilitate philosophical communication, and form a more convenient instrument of reasoning and of invention, than those we possess at present, is a question of very difficult discussion, and upon which I shall not presume to offer an opinion. The failure of Wilkins's very ingenious attempt towards a real character, and a philosophical language, is not perhaps decisive against such a project; for, not to mention some radical defects in his plan, the views of that very eminent philosopher do not seem to have extended much farther than to promote and extend the literary intercourse among different nations. Leibnitz, so far as I know, is the only author who has hitherto conceived the possibility of aiding the powers of invention and of reasoning, by the use of a more convenient instrument of thought; but he has no where explained his ideas on this very interesting subject. It is only from a conversation of his with Mr. Boyle and Mr. Oldenburgh, when he was in England in 1673, and from some imperfect hints in different parts of his works,* that we find it had engaged his attention. In the course of this conversation he observed, that Wilkins had mistaken the true end of a real character, which was not merely to enable different nations to correspond easily together, but to assist the reason, the invention, and the memory. In his writings, too, he somewhere speaks of an alphabet of human thoughts, which he had been employed in forming, and which, probably, (as Fontenelle has remarked,) had some relation to his universal language.†

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* See Note (L.)

† "M. Leibnitz avoit conçu le projet d'une langue philosophique et universelle. Wilkins Evêque de Chester, et Dalgarno, y avoient travaillé ; mais dès le tems qu'il étoit en Angleterre, il avoit dit à Messieurs Boyle et d'Oldenbourg qu'il ne croyoit pas que ces grands hommes eussent encore frappé au but. Ils pouvoient bien faire que des nations qui ne s'entendoient pas eussent aisément commerce, mais ils n'avoient pas attrappé les véritables caractères réels, qui étoient l'instrument le plus fin dont l'esprit humain se pût servir, et qui devoient extrêmement faciliter et le raisonnement, et la mémoire, et l'invention des choses. Ils devoient ressembler, autant qu'il étoit possible, aux caractères d'algèbre qui en effet sont très simples, et très expressifs, qui n'ont jamais ni superfluité ni équivoque, et dont toutes les variétés sont raisonnées. Il a parlé en quelque endroit, d'un alphabet das pensées humaines, qu'il méditoit. Selon toutes les apparences,

The new nomenclature which has been introduced into chymistry, seems to me to furnish a striking illustration of the effect of appropriated and well-defined expressions, in aiding the intellectual powers; and the period is probably not far distant, when similar innovations will be attempted in some of the other sciences.

SECTION V.

Of the Purposes to which the Powers of Abstraction and Generalization are subservient.

It has been already shown, that, without the use of signs, all our knowledge must necessarily have been limited to individuals, and that we should have been perfectly incapable both of classification and general reasoning. Some authors have maintained that without the power of generalization, (which I have endeavoured to show means nothing more than the capacity of employing general terms,) it would have been impossible for us to have carried on any species of reasoning whatever. But I cannot help thinking that this opinion is erroneous, or, at least, that it is very imperfectly stated. The truth is, it appears to me to be just in one sense of the word *reasoning*, but false in another; and I even suspect it is false in that sense of the word in which it is most commonly employed. Before, therefore, it is laid down as a general proposition, the meaning we are to annex to this very vague and ambiguous term should be ascertained with precision.

It has been remarked by several writers, that the expectation which we feel of the continuance of the laws of nature, is not founded upon reasoning; and different theories have of late been proposed to account for its origin. Mr. Hume resolves it into the association of ideas. Dr. Reid, on the other hand, maintains, that it is an original principle of our constitution, which does not admit of any explanation, and which, therefore, is to be

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cet alphabet avoit rapport à sa langue universelle." *Eloge de M.* LEIBNITZ *par M. de* FONTENELLE.

ranked among those general and ultimate facts, beyond which philosophy is unable to proceed.* Without this principle of expectation, it would be impossible for us to accommodate our conduct to the established course of nature; and, accordingly, we find that it is a principle coeval with our very existence; and, in some measure, common to man with the lower animals.

It is an obvious consequence of this doctrine, that, although philosophers be accustomed to state what are commonly called the laws of nature, in the form of general propositions, it is by no means necessary for the practical purposes of life, that we should express them in this manner; or even that we should express them in words at all. The philosopher, for example, may state it as a law of nature, that "fire scorches;" or that "heavy bodies, when unsupported, fall downwards:" but long before the use of artificial signs, and even before the dawn of reason, a child learns to act upon both of these suppositions. In doing so, it is influenced merely by the instinctive principle which has now been mentioned, directed in its operation (as is the case with many other instincts) by the experience of the individual. If man, therefore, had been destined for no other purposes, than to acquire such an acquaintance with the course of nature as is necessary for the preservation of his animal existence, he might have fulfilled all the ends of his being without the use of language.

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* In inquiries of this nature, so far removed from the common course of literary pursuits, it always gives me pleasure to remark a coincidence of opinion among different philosophers; particularly among men of original genius, and who have been educated in different philosophical systems. The following passage, in which M. de Condorcet gives an account of some of the metaphysical opinions of the late Mr. Turgot, approaches very nearly to Dr. Reid's doctrines.

"La mémoire de nos sensations, et la faculté que nous avons de réfléchir sur ces sensations passées et de les combiner, sont le seul principe de nos connoissances. La supposition qu'il existe des loix constantes auxquelles tous les phénomènes observés sont assujettis de manière a reparoître dans tous les temps, dans toutes les circonstances, tels qu'ils sont déterminés par ces loix, est le seul fondement de la certitude de ces connoissances.

"Nous avons la conscience d'avoir observé cette constance, et un sentiment involontaire nous force de croire qu'elle continuera de subsister. La probabilité qui en resulte, quelque grande qu'elle soit, n'est pas une certitude. Aucune relation nécessaire ne lie pour nous le passé à l'avenir, ni la constance de ce que j'ai vu à celle de ce que j'aurois continué d'observer si j'étois resté dans des circonstances semblables; mais l'impression qui me porte à regarder comme existant comme réel ce qui m'a présenté ce caractère de constance est irrésistible."—*Vide de* TURGOT, partie ii. p 46.

"Quand un François et un Anglois pensent de même, (says Voltaire,) il faut bien qu'ils aient raison."

As we are enabled, by our instinctive anticipation of physical events, to accommodate our conduct to what we foresee is to happen, so we are enabled, in many cases, to increase our power, by employing physical causes as instruments for the accomplishment of our purposes; nay, we can employ a series of such causes, so as to accomplish very remote effects. We can employ the agency of air, to increase the heat of a furnace; the furnace, to render iron malleable; and the iron to all the various purposes of the mechanical arts. Now, it appears to me, that all this may be conceived and done without the aid of language: and yet, assuredly, to discover a series of means subservient to a particular end, or, in other words, an effort of mechanical invention, implies, according to the common doctrines of philosophers, the exercise of our reasoning powers. In this sense, therefore, of the word *reasoning*, I am inclined to think, that it is not essentially connected with the faculty of generalization, or with the use of signs.

It is some confirmation of this conclusion, that savages, whose minds are almost wholly occupied with particulars, and who have neither inclination nor capacity for general speculations, are yet occasionally observed to employ a long train of means for accomplishing a particular purpose. Even something of this kind, but in a very inferior degree, may, I think, be remarked in the other animals; and that they do not carry it farther, is, probably not the effect of their want of generalization, but of the imperfection of some of those faculties which are common to them with our species, particularly of their powers of attention and recollection. The instances which are commonly produced, to prove that they are not destitute of the power of reasoning, are all examples of that species of contrivance which has been mentioned; and are perfectly distinct from those intellectual processes to which the use of signs is essentially subservient.*

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* One of the best attested instances which I have met with, of sagacity in the lower animals, is mentioned by M. Bailly, in his *Lettre sur les Animaux*, addressed to M. Le Roy.

Whether that particular species of mechanical contrivance which has now been mentioned, and which consists merely in employing a series of physical causes to accomplish an effect which we cannot produce immediately, should or should not be dignified with the name of reasoning, I shall not now inquire. It is sufficient for my present purpose to remark, that it is essentially different from those intellectual processes to which the use of signs is indispensably necessary. At the same time, I am ready to acknowledge, that what I have now said, is not strictly applicable to those more complicated mechanical inventions, in which a variety of powers are made to conspire at once to produce a particular effect. Such contrivances, perhaps, may be found to involve processes of the mind which cannot be carried on without *signs*. But these questions will fall more properly under our consideration when we enter on the subject of reasoning.

In general, it may be remarked, that, in so far as our thoughts relate merely to individual objects, or to individual events, which we have actually perceived, and of which we retain a distinct remembrance,* we are not

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"Un de mes amis, homme d'esprit et digne de confiance, m'a raconté deux faits dont il a été témoin. Il avoit un singe très intelligent; il s'amusoit à lui donner des noix dont l'animal étoit très friand; mais il les plaçoit assez loin, pour que retenu par sa chaîne, le singe ne pût pas les atteindre: après bien des efforts inutiles qui ne servent qu'à préparer l'invention, le singe, voyant passer un domestique portant une serviette sous le bras, se saisit de cette serviette, et s'en servit pour atteindre à la noix et l'amener jusqu'à lui. La manière de casser la noix exigea une nouvelle invention; il en vint à bout, en plaçant la noix à terre, en y faisant tomber de haut une pierre ou un caillou pour la briser. Vous voyez Monsieur, que sans avoir connu, comme Galilée, les loix de la chûte des corps, le singe, avoit bien remarqué la force que ces corps acquièrent par la chûte. Ce moyen cependant se trouva en défaut. Un jour qu'il avoit plu, la terre étoit molle, la noix enfonçoit, et la pierre n'avoit plus d'action pour la briser. Que fit le singe? Il alla chercher un tuileau, plaça la noix dessus, et en laissant tomber la pierre il brisa la noix qui n'enfonçoit plus."---*Discours et Mémoires par l'Auteur de l'Histoire del l' Astronomie.* A Paris, 1796, tome ii. p. 126.

Admitting these facts to be accurately stated, they still leave an essential distinction between man and brutes; for in none of the contrivances here mentioned, is there any thing analogous to those intellectual processes which lead the mind to general conclusions, and which (according to the foregoing doctrine) imply the use of general terms. Those powers, therefore, which enable us to classify objects, and to employ signs as an instrument of thought, are, as far as we can judge, peculiar to the human species.

* I have thought it proper to add this limitation of the general proposition; because individual objects, and individual events, which have not fallen under the examination of our senses, cannot possibly be made the subjects of our consideration, but by means of language. The manner in which we think of such

under the necessity of employing words. It frequently, however, happens, that when the subjects of our consideration are particular, our reasoning with respect to them may involve very general notions; and, in such cases, although we may conceive, without the use of words, the things about which we reason, yet we must necessarily have recourse to language in carrying on our speculations concerning them. If the *subjects* of our reasoning be general, (under which description I include all our reasonings, whether more or less comprehensive, which do not relate merely to individuals,) words are the sole objects about which our thoughts are employed. According as these words are comprehensive or limited in their signification, the conclusions we form will be more or less general; but this accidental circumstance does not in the least affect the nature of the intellectual process; so that it may be laid down as a proposition which holds without any exception, that, in every case, in which we extend our speculations beyond individuals, language is not only an useful auxiliary, but is the sole instrument by which they are carried on.

These remarks naturally lead me to take notice of what forms the characteristical distinction between the speculations of the philosopher and of the vulgar. It is not, that the former is accustomed to carry on his processes of reasoning to a greater extent than the latter; but that the conclusions he is accustomed to form, are far more comprehensive, in consequence of the habitual employment of more comprehensive terms. Among the most unenlightened of mankind, we often meet with individuals who possess the reasoning faculty in a very eminent degree, but as this faculty is employed merely

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objects and events, is accurately described in the following passage of Wollaston; however unphilosophical the conclusion may be which he deduces from his reasoning.

"A man is not known ever the more to posterity, because his name is transmitted to them; he doth not live because his name does. When it is said, Julius Cæsar subdued Gaul, beat Pompey, changed the Roman commonwealth into a monarchy, &c. it is the same thing as to say, the conqueror of Pompey was Cæsar; that is, Cæsar, and the Conqueror of Pompey, are the same thing; and Cæsar is as much known by the one distinction as the other.—The amount then is only this: that the conqueror of Pompey conquered Pompey; or somebody conquered Pompey; or rather, since Pompey is as little known now as Cæsar, somebody conquered somebody. Such a poor business is this boasted immortality; and such, as has been here described, is the thing called glory among us!" *Religion of Nat. Del. p.* 117.

about particulars, it never can conduct them to general truths, and, of consequence, whether their pursuits in life lead them to speculation or to action, it can only fit them for distinguishing themselves in some very limited and subordinate sphere. The philosopher, whose mind has been familiarized by education, and by his own reflections, to the correct use of more comprehensive terms, is enabled, without perhaps a greater degree of intellectual exertion than is necessary for managing the details of ordinary business, to arrive at general theorems; which, when illustrated to the lower classes of men, in their particular applications, seem to indicate a fertility of invention, little short of supernatural.*

The analogy of the algebraical art may be of use in illustrating these observations. The difference, in fact, between the investigations we carry on by its assistance, and other processes of reasoning, is more inconsiderable than is commonly imagined; and, if I am not mistaken, amounts only to this, that the former are expressed in an appropriated language, with which we are not accustomed to associate particular notions. Hence they exhibit the efficacy of signs as an instrument of thought, in a more distinct and palpable manner, than the speculations we carry on by words, which are continually awakening the power of conception.

When the celebrated Vieta showed algebraists, that, by substituting in their investigations letters of the alphabet, instead of known quantities, they might render the solution of every problem subservient to the discovery of a general truth, he did not increase the difficulty of algebraical reasonings; he only enlarged the signification of the terms of which they were expressed. And if, in teaching that science, it is found expedient to accustom students to solve problems by means of the particular numbers which are given, before they are made acquainted with literal or specious arithmetic, it is not because the former processes are less intricate than the latter, but because their scope and utility are more obvious, and because it is more easy to illustrate by examples than by words, the difference between a particular conclusion and a general theorem.

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* "General reasonings seem intricate, merely because they are general; nor is it easy for the bulk of mankind to distinguish, in a great number of particulars, that common circumstance in which they all agree, or to extract it, pure and unmixt, from the other superfluous circumstances. Every judgment or conclusion with them is particular. They cannot enlarge their view to those universal propositions, which comprehend under them an infinite number of individuals, and include a whole science in a single theorem. Their eye is confounded with such an extensive prospect; and the conclusions derived from it, even though clearly expressed, seem intricate and obscure." HUME's *Political Discourses.*

The difference between the intellectual processes of the vulgar and of the philosopher, is perfectly analogous to that between the two states of the algebraical art before and after the time of Vieta; the general terms which are used in the various sciences, giving to those who can employ them with correctness and dexterity, the same sort of advantage over the uncultivated sagacity of the bulk of mankind, which the expert algebraist possesses over the arithmetical accomptant.

If the foregoing doctrine be admitted as just, it exhibits a view of the utility of language, which appears to me to be peculiarly striking and beautiful; as it shows that the same faculties which, without the use of signs, must necessarily have been limited to the consideration of individual objects and particular events, are, by means of signs, fitted to embrace without effort, those comprehensive theorems, to the discovery of which, in detail, the united efforts of the whole human race would have been unequal. The advantage our animal strength acquires by the use of mechanical engines, exhibits but a faint image of that increase of our intellectual capacity which we owe to language. It is this increase of our natural powers of comprehension, which seems to be the principal foundation of the pleasure we receive from the discovery of general theorems. Such a discovery gives us at once the command of an infinite variety of particular truths, and communicates to the mind a sentiment of its own power, not unlike to what we feel when we contemplate the magnitude of those physical effects, of which we have acquired the command by our mechanical contrivances.

It may perhaps appear, at first, to be a farther consequence of the principles I have been endeavouring to establish, that the difficulty of philosophical discoveries is much less than is commonly imagined; but the truth is, it only follows from them, that this difficulty is of a different nature, from what we are apt to suppose on a superficial view of the subject. To employ, with skill, the very delicate instrument which nature has made essentially subservient to general reasoning, and to guard against the errors which result from an injudicious use of it, require an uncommon capacity of patient attention, and a cautious circumspection in conducting our various intellectual processes, which can only be acquired by early habits of philosophical reflection. To assist and direct us in making this acquisition ought to form the most important branch of a rational logic; a science of far more extensive utility, and of which the principles lie much deeper in the philosophy of the human mind, than the *trifling* art which is commonly dignified with that name. The branch in particular to which the foregoing observations more immediately relate, must for ever remain in its infancy, till a most difficult and important desideratum in the history of the mind is supplied, by an explanation of the gradual steps by which it acquires the use of the various classes of words which compose the language of a cultivated and enlightened people. Of some of the errors of reasoning to which we are exposed by an incautious use of the words, I took notice in the preceding section, and I shall have occasion afterwards to treat the same subject more in detail in a subsequent part of my work.

SECTION VI.

Of the Errors to which we are liable in Speculation, and in the Conduct of Affairs, in consequence of a rash Application of general Principles.

It appears sufficiently from the reasonings which I offered in the preceding Section, how important are the advantages which the philosopher acquires, by quitting the study of particulars, and directing his attention to general principles. I flatter myself it appears farther, from the same reasonings, that it is in consequence of the use of language alone, that the human mind is rendered capable of these comprehensive speculations.

In order, however, to proceed with safety in the use of general principles, much caution and address are necessary, both in establishing their truth, and in applying them to practice. Without a proper attention to the circumstances by which their application to particular cases must be modified, they will be a perpetual source of mistake, and of disappointment, in the conduct of affairs, however rigidly just they may be in themselves, and however accurately we may reason from them. If our general principles happen to be false, they will involve us in errors, not only of conduct but of speculation; and our errors will be the more numerous, the more comprehensive the principles are on which we proceed.

To illustrate these observations fully, would lead to a minuteness of disquisition inconsistent with my general plan; and I shall therefore, at present, confine myself to such remarks as appear to be of most essential importance.

And, in the first place, it is evidently impossible to establish solid general principles, without the previous study of particulars; in other words, it is necessary to begin with the examination of individual objects, and individual events, in order to lay a ground-work for accurate classification, and for a just investigation of the laws of nature. It is in this way only that we can expect to arrive at general principles, which may be safely relied on, as guides to the knowledge of particular truths: and unless our principles admit of such a practical application, however beautiful they may appear to be in theory, they are of far less value than the limited acquisitions of the vulgar. The truth of these remarks is now so universally admitted, and is indeed so obvious in itself, that it would be superfluous to multiply words in supporting them; and I should scarcely have thought of stating them in this Chapter, if some of the most celebrated philosophers of antiquity had not been led to dispute them, in consequence of the mistaken opinions which they entertained concerning the nature of universals. Forgetting that *genera* and *species* are mere arbitrary creations which the human mind forms, by withdrawing the attention from the distinguishing qualities of objects, and giving a common name to their resembling qualities, they conceive universals to be real existences, or (as they expressed it) to be the essences of individuals; and flattered themselves with the belief, that by directing their attention to these essences in the first instance, they might be enabled to penetrate the secrets of the universe, without submitting to the study of nature in detail. These errors, which were common to the Platonists and the Peripatetics, and which both of them seem to have adopted from the Pythagorean school, contributed perhaps more than any thing else, to retard the progress of the ancients in physical knowledge. The late learned Mr. Harris is almost the only author of the present age who has ventured to defend this plan of philosophizing, in opposition to that which has been so successfully followed by the disciples of lord Bacon.

"The Platonists," says he, "considering science as something ascertained, definite, and steady, would admit nothing to be its object which was vague, indefinite, and passing. For this reason they excluded all individuals or objects of sense, and (as Ammonius expresses it) raised themselves in their contemplations from beings particular to beings universal, and which from their own nature, were eternal and definite."—"Consonant to this was the advice of Plato, with respect to the progress of our speculations and inquiries, to descend from those higher genera, which include many subordinate species, down to the lowest rank of species, those which include only individuals. But here it was his opinion, that our inquiries should stop, and, as to individuals, let them wholly alone; because of these there could not possibly be any science."*

"Such," continues this author, "was the method of ancient philosophy. The fashion, at present, appears to be somewhat altered, and the business of philosophers to be little else than the collecting from every quarter, into voluminous records, an infinite number of sensible, particular, and unconnected facts, the chief effect of which is to excite our admiration."—In another part of his works the same author observes, that "the mind, truly wise, quitting the study of particulars, as knowing their multitude to be infinite and incomprehensible, turns its intellectual eye to what is general and comprehensive, and through generals learns to see, and recognise whatever exists."*

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* HARRIS'S *Three Treatises*, pages 341, 342.

If we abstract from these obvious errors of the ancient philosophers, with respect to the proper order to be observed in our inquiries, and only suppose them to end where the Platonists said that they should begin, the magnificent encomiums they bestowed on the utility of those comprehensive truths which form the object of science (making allowance for the obscure and mysterious terms in which they expressed them) can scarcely be regarded as extravagant. It is probable that from a few accidental instances of successful investigation, they had been struck with the wonderful effect of general principles in increasing the intellectual power of the human mind; and, misled by that impatience in the study of particulars which is so often connected with the consciousness of superior ability, they labored to persuade themselves, that, by a life devoted to abstract meditation, such principles might be rendered as immediate objects of intellectual perception, as the individuals which compose the material world are of our external senses. By connecting this opinion with their other doctrines concerning universals, they were unfortunately enabled to exhibit it in so mysterious a form, as not only to impose on themselves, but to perplex the understandings of all the learned in Europe, for a long succession of ages.

The conclusion to which we are led by the foregoing observations, is, that the foundation of all human knowledge must be laid in the examination of particular objects and particular facts; and that it is only as far as our general principles are resolvable into these primary elements, that they possess either truth or utility. It must not, however, be understood to be implied in this conclusion, that all our knowledge must ultimately rest on our own proper experience. If this were the case, the progress of science, and the progress of human improvement, must have been wonderfully retarded; for, if it had been necessary for each individual to form a classification of objects, in consequence of observations and abstractions of his own, and to infer from the actual examination of particular facts, the general truths on which his conduct proceeds; human affairs would at this day remain nearly in the same state to which they were brought by the experience of the first generation. In fact, this is very nearly the situation of the species in all those parts of the world, in which the existence of the race depends on the separate efforts which each individual makes, in procuring for himself the necessaries of life; and in which, of consequence, the habits and acquirements of each individual must be the result of his own personal experience. In a cultivated society, one of the first acquisitions which children make, is the use of language; by which means they are familiarized, from their earliest years, to the consideration of classes of objects, and of general truths, and before that time of life at which the savage is possessed of the knowledge necessary for his own preservation, are enabled to appropriate to themselves the accumulated discoveries of ages.

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* HARRIS'S *Three Treatises*, page 227.

Notwithstanding, however, the stationary condition in which the race must, of necessity, continue, prior to the separation of arts and professions, the natural disposition of the mind to ascend from particular truths to general conclusions, could not fail to lead individuals, even in the rudest state of society, to collect the results of their experience, for their own instruction and that of others. But without the use of general terms, the only possible way of communicating such conclusions would be by means of some particular example, of which the general application was striking and obvious. In other words, the wisdom of such ages will necessarily be expressed in the form of fables or parables, or in the still simpler form of proverbial instances; and not in the scientific form of general maxims. In this way, undoubtedly, much useful instruction, both of a prudential and moral kind, might be conveyed: at the same time, it is obvious, that, while general truths continue to be expressed merely by particular exemplifications, they would afford little or no opportunity to one generation to improve on the speculations of another; as no effort of the understanding could combine them together, or employ them as premises, in order to obtain other conclusions more remote and comprehensive. For this purpose, it is absolutely necessary that the scope or moral of the fable should be separated entirely from its accessary circumstances, and stated in the form of a general proposition.

From what has now been said, it appears, how much the progress of human reason, which necessarily accompanies the progress of society, is owing to the introduction of general terms, and to the use of general propositions. In consequence of the gradual improvements which take place in language as an instrument of thought, the classifications both of things and facts with which the infant faculties of each successive race are conversant, are more just and more comprehensive than those of their predecessors: which, in one age, were confined to the studious and enlightened few, becoming in the next, the established creed of the learned; and in the third, forming part of the elementary principles of education. Indeed, among those, who enjoy the advantages of early instruction, some of the most remote and wonderful conclusions of the human intellect are, even in infancy, as completely familiarized to the mind, as the most obvious phenomena which the material word exhibits to their senses.

If these remarks be just, they open an unbounded prospect of intellectual improvement to future ages; as they point out a provision made by nature to facilitate and abridge, more and more, the process of study, in proportion as the truths to be acquired increase in number. Nor is this prospect derived from theory alone. It is encouraged by the past history of all the sciences; in a more particular manner, by that of mathematics and physics, in which the state of discovery, and the prevailing methods of instruction may, at all times, be easily compared together. In this last observation I have been anticipated by a late eminent mathematician, whose eloquent and philosophical statement of the argument cannot fail to carry conviction to those, who are qualified to judge of the facts on which his conclusion is founded:

"To such of my readers, as may be slow in admitting the possibility of this progressive improvement in the human race, allow me to state, as an example, the history of that science in which the advances of discovery are the most certain, and in which they may be measured with the greatest precision. Those elementary truths of geometry and of astronomy which, in India and Egypt, formed an occult science, upon which an ambitious priesthood founded its influence, were become, in the times of Archimedes and Hipparchus, the subjects of common education in the public schools of Greece. In the last century, a few years of study were sufficient for comprehending all that Archimedes and Hipparchus knew; and, at present, two years employed under an able teacher, carry the student beyond those conclusions, which limited the inquiries of Leibnitz and Newton. Let any person reflect on these facts; let him follow the immense chain which connects the inquiries of Euler with those of a Priest of Memphis; let him observe, at each epoch, how genius outstrips the present age, and how it is overtaken by mediocrity in the next; he will perceive, that nature has furnished us with the means of abridging and facilitating our intellectual labor, and that there is no reason for apprehending, that such simplifications can ever have an end. He will perceive, that at the moment when a multitude of particular solutions, and of insulated facts, begin to distract the attention and to overcharge the memory, the former gradually lose themselves in one general method, and the latter unite in one general law; and that these generalizations continually succeeding one to another, like the successive multiplications of a number by itself, have no other limit than that infinity which the human faculties are unable to comprehend."*

SECTION VII.

Continuation of the same Subject.—Differences in the Intellectual Characters of Individuals, arising from their different Habits of Abstraction and Generalization.

In mentioning as one of the principal effects of civilization, its tendency to familiarize the mind to general terms, and to general propositions, I did not mean to say, that this influence extends equally to all the classes of men in society. On the contrary, it is evidently confined, in a great measure, to those who receive a liberal education; while the minds of the lower orders, like those of savages, are so habitually occupied about particular objects and particular events, that, although they are sometimes led, from imitation, to employ general expressions, the use which they make of them is much more the result of memory than judgment; and it is but seldom that they are able to comprehend fully any process of reasoning in which they are involved.

It is hardly necessary for me to remark, that this observation, with respect to the incapacity of the vulgar for general speculations, (like all observations of a similar nature,) must be received with some restrictions. In such a state of society as that in which we live, there is hardly any individual to be found, to whom some general terms, and some general truths, are not perfectly familiar; and therefore, the foregoing conclusions are to be considered as descriptive of those habits of thought alone, which are most prevalent in their mind. To abridge the labor of reasoning, and of memory, by directing the attention to general principles, instead of particular truths, is the professed aim of all philosophy; and according as individuals have more or less of the philosophic spirit, their habitual speculations (whatever the nature of their pursuits may be) will relate to the former or to the latter of these objects.

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* See Note (M.)

There are, therefore, among the men who are accustomed to the exercise of their intellectual powers, two classes, whose habits of thought are remarkably distinguished from each other;—the one class comprehending what we commonly call men of business, or, more properly, men of detail; the other, men of abstraction; or, in other words, philosophers.

The advantage which, in certain respects, the latter of these possess over the former, have been already pointed out; but it must not be supposed, that these advantages are always purchased without some inconvenience. As the solidity of our general principles depends on the accuracy of the particular observations into which they are ultimately resolvable, so their utility is to be estimated by the practical applications of which they admit; and it unfortunately happens, that the same turn of mind which is favorable to philosophical pursuits, unless it be kept under proper regulation, is extremely apt to disqualify us for applying our knowledge to use in the exercise of the arts, and in the conduct of affairs.

In order to perceive the truth of these remarks, it is almost sufficient to recollect, that as classification, and of consequence, general reasoning, presuppose the exercise of abstraction, a natural disposition to indulge in them cannot fail to lead the mind to overlook the specific differences of things, in attending to their common qualities. To succeed, however, in practice, a familiar and circumstantial acquaintance with the particular objects which fall under our observation, is indispensably necessary.

But, farther: As all general principles are founded on classifications which imply the exercise of abstraction, it is necessary to regard them in their practical applications, merely as approximations to the truth; the defects of which must be supplied by habits acquired by personal experience. In considering, for example, the theory of the mechanical powers; it is usual to simplify the objects of our conception, by abstracting from friction, and from the weight of the different parts of which they are composed. Levers are considered as mathematical lines, perfectly inflexible ; and ropes, as mathematical lines, perfectly flexible ;—and by means of these, and similar abstractions, a subject, which is in itself extremely complicated, is brought within the reach of elementary geometry. In the theory of politics, we find it necessary to abstract from many of the peculiarities which distinguish different forms of government from each other, and to reduce them to certain general classes, according to their prevailing tendency. Although all the governments we have ever seen, have had more or less of mixture in their composition, we reason concerning pure monarchies, pure aristocracies, and pure democracies, as if there really existed political establishments corresponding to our definitions. Without such a classification, it would be impossible for us to fix our attention, amidst the multiplicity of particulars which the subject presents to us, or to arrive at any general principles, which might serve to guide our inquiries in comparing different institutions together.

It is for a similar reason, that the speculative farmer reduces the infinite variety of soils to a few general descriptions ; the physician, the infinite variety of bodily constitutions to a few temperaments ; and the moralist, the infinite variety of human characters to a few of the ruling principles of action.

Notwithstanding, however, the obvious advantages we derive from these classifications, and the general conclusions to which they lead, it is evidently impossible, that principles, which derived their origin from efforts of abstraction, should apply literally to practice ; or, indeed, that they should afford us any considerable assistance in conduct, without a certain degree of practical and experimental skill. Hence it is, that the mere theorist so frequently exposes himself, in real life, to the ridicule of men whom he despises ; and in the general estimation of the world, falls below the level of the common drudges in business and the arts. The walk, indeed, of these unenlightened practitioners, must necessarily be limited by their accidental opportunities of experience ; but so far as they go, they operate with facility and success ; while the merely speculative philosopher, although possessed of principles which enable him to approximate to the truth in an infinite variety of untried cases, and although he sees, with pity, the narrow views of the multitude, and the ludicrous pretensions with which they frequently oppose their trifling successes to his theoretical speculations, finds himself perfectly at a loss, when he is called upon, by the simplest occurrences of ordinary *life*, to carry his principles into execution. Hence the origin of that maxim, "which," as Mr. Hume remarks, "has been so industriously propagated by the dunces of every age, that a man of genius is unfit for business."

In what consists practical or experimental skill, it is not easy to explain completely; but, among other things, it obviously implies a talent for minute and comprehensive and rapid observation; a memory, at once attentive and ready; in order to present to us accurately, and without reflection, our theoretical knowledge: a presence of mind, not to be disconcerted by unexpected occurrences; and, in some cases, an uncommon degree of perfection in the external senses, and in the mechanical capacities of the body. All these elements of practical skill, it is obvious, are to be acquired only by habits of active exertion, and by a familiar acquaintance with real occurrences; for, as all the practical principles of our nature, both intellectual and animal, have a reference to particulars, and not to generals, so it is in the active scenes of life alone, and amidst the details of business, that they can be cultivated and improved.

The remarks which have been already made, are sufficient to illustrate the impossibility of acquiring a talent for business, or for any of the practical arts of life, without actual experience. They show also, that mere experience, without theory, may qualify a man, in certain cases, for distinguishing himself in both. It is not, however, to be imagined, that in this way individuals are to be formed for the uncommon, or for the important situations of society, or even for enriching the arts by new inventions; for, as their address and dexterity are founded entirely on imitation, or derived from the lessons which experience has suggested to them, they cannot possibly extend to new combinations of circumstances. Mere experience, therefore, can, at best, prepare the mind for the subordinate departments of life; for conducting the established routine of business, or for a servile repetition in the arts of common operations.

In the character of Mr. George Grenville, which Mr. Burke, introduced in his celebrated Speech on American Taxation, a lively picture is drawn of the insufficiency of mere experience to qualify a man for new and untried situations in the administration of government. The observations he makes on this subject are expressed with his usual beauty and felicity of language, and are of so general a nature, that, with some trifling alterations, they may be extended to all the practical pursuits of life.

"Mr. Grenville was bred to the law, which is, in my opinion, one of the first and noblest of human sciences; a science which does more to quicken and invigorate the understanding, than all the other kinds of learning put together; but it is not apt, except in persons very happily born, to open and to liberalize the mind exactly in the same proportion. Passing from that study, he did not go very largely into the world, but plunged into business; I mean into the business of office, and the limited and fixed methods and forms established there. Much knowledge is to be had, undoubtedly, in that line; and there is no knowledge which is not valuable. But it may be truly said, that men too much conversant in office, are rarely minds of remarkable enlargement. Their habits of office are apt to give them a turn to think the substance of business not to be much more important, than the forms in which it is conducted. These forms are adapted to ordinary occasions; and, therefore, persons who are nurtured in office, do admirably well, as long as things go on in their common order; but when the high roads are broken up, and the waters out, when a new and troubled scene is opened, and the file affords no precedent, then it is that a greater knowledge of mankind, and a far more extensive comprehension of things, is requisite, than ever office gave, or than office can ever give."

Nor is it in new combinations of circumstances alone, that general principles assist us in the conduct of affairs; they render the application of our practical skill more unerring, and more perfect. For as general principles limit the utility of practical skill to supply the imperfections of theory, they diminish the number of cases in which this skill is to be employed; and thus, at once, facilitate its improvement, wherever it is requisite; and lessen the errors to which it is liable, by contracting the field within which it is possible to commit them.

It would appear then, that there are two opposite extremes into which men are apt to fall, in preparing themselves for the duties of active life. The one arises from habits of abstraction and generalization carried to an excess; the other from a minute, an exclusive, and an unenlightened attention to the objects and events which happen to fall under their actual experience.

In a perfect system of education, care should be taken to guard against both extremes, and to unite habits of abstraction with habits of business, in such a manner as to enable men to consider things, either in general, or in detail, as the occasion may require. Whichever of these habits may happen to gain an undue ascendant over the mind, it will necessarily produce a character limited in its powers, and fitted only for particular exertions. Hence some of the apparent inconsistencies which we may frequently remark in the intellectual capacities of the same person. One man, from an early indulgence in abstract speculation, possesses a knowledge of general principles, and a talent for general reasoning, united with a fluency and eloquence in the use of general terms, which seem, to the vulgar, to announce abilities fitted for any given situation in life: while, in the conduct of the simplest affairs, he exhibits every mark of irresolution and incapacity. Another, not only acts with propriety and skill, in circumstances which require a minute attention to details, but possesses an acuteness of reasoning, and a facility of expression on all subjects, in which nothing but what is particular is involved; while, on general topics, he is perfectly unable either to reason, or to judge. It is this last turn of mind, which I think we have, in most instances, in view, when we speak of good sense, or common sense, in opposition to science and philosophy. Both philosophy and good sense imply the exercise of our reasoning powers; and they differ from each other only, according as these powers are applied to particulars or to generals. It is on good sense (in the acceptation in which I have now explained the term) that the success of men in the inferior walks of life chiefly depends; but, that it does not always indicate a capacity for abstract science, or for general speculation, or for able conduct in situations which require comprehensive views, is matter even of vulgar remark.

Although, however, each of these defects has a tendency to limit the utility of the individuals in whom it is to be found, to certain stations in society, no comparison can be made, in point of original value, between the intellectual capacities of the two classes of men to which they characteristically belong. The one is the defect of a vigorous, an ambitious, and a comprehensive genius, improperly directed; the other, of an understanding, minute and circumscribed in its views, timid in its exertions, and formed for servile imitation. Nor is the former defect (however difficult it may be to remove it when confirmed by long habit) by any means so incurable as the latter; for it arises, not from original constitution, but from some fault in early education; while every tendency to the opposite extreme is more or less characteristical of a mind, useful, indeed, in a high degree, when confined to its proper sphere, but destined, by the hand that formed it, to borrow its lights from another.

As an additional proof of the natural superiority which men of general views possess over the common drudges in business, it may be farther observed, that the habits of inattention incident to the former, arise in part from the little interest which they take in particular objects and particular occurrences, and are not wholly to be ascribed to an incapacity of attention. When the mind has been long accustomed to the consideration of classes of objects and of comprehensive theorems, it cannot, without some degree of effort, descend to that humble walk of experience, or of action, in which the meanest of mankind are on a level with the greatest. In important situations, accordingly, men of the most general views are found not to be inferior to the vulgar in their attention to details; because the objects and occurrences which such situations present, rouse their passions, and interest their curiosity, from the magnitude of the consequences to which they lead.

When theoretical knowledge and practical skill are happily combined in the same person, the intellectual power of man appears in its full perfection, and fits him equally to conduct, with a masterly hand, the details of ordinary business, and to contend successfully with the untried difficulties of new and hazardous situations. In conducting the former, mere experience may frequently be a sufficient guide, but experience and speculation must be combined together to prepare us for the latter. "Expert men," says Lord Bacon, "can execute and judge of particulars one by one; but the general counsels, and the plots, and the marshalling of affairs, come best from those that are learned."

SECTION VIII.

Continuation of the same Subject.—Use and Abuse of general Principles in Politics.*

The foregoing remarks, on the dangers to be apprehended from a rash application of general principles, hold equally with respect to most of the practical arts. Among these, however, there is one of far superior dignity to the rest, which, partly on account of its importance, and partly on account of some peculiarities in its nature, seems to be entitled to a more particular consideration. The art I allude to, is that of Legislation; an art which differs from all others in some very essential respects, and to which, the reasonings in the last Section must be applied with many restrictions.

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* The events which have happened since the publication of the first edition of this volume in 1792, might have enabled me to confirm many of the observations in this section, by an appeal to facts still fresh in the recollection of my readers; and in one or two instances by slight verbal corrections, to guard against the possibility of uncandid misinterpretation: but, for various reasons, which it is unnecessary to state at present, I feel it to be a duty which I owe to myself, to send the whole discussion again to the press in its original form. That the doctrine it inculcates is favorable to the good order and tranquillity of society cannot be disputed; and, as far as I myself am personally interested, I have no wish to vitiate the record which it exhibits of my opinions.

On some points which are touched upon very slightly here, I have explained myself more fully, in the fourth section of my Biographical Account of Mr. Smith, read before the Royal Society of Edinburgh in 1793, and published in the third volume of their transactions. (*Second Edition*, 1802.)

Before proceeding farther, it is necessary for me to premise, that it is chiefly in compliance with common language and common prejudices, that I am sometimes led, in the following observations, to contrast theory with experience. In the proper sense of the word *theory*, it is so far from standing in opposition to experience, that it implies a knowledge of principles, of which the most extensive experience alone could put us in possession. Prior to the time of Lord Bacon, indeed, an acquaintance with facts was not considered as essential to the formation of theories; and from these ages, has descended to us an indiscriminate prejudice against general principles, even in those cases in which they have been fairly obtained in the way of induction.

But not to dispute about words, there are plainly two sets of political reasoners; one of which consider the actual institutions of mankind as the only safe foundation for our conclusions, and think every plan of legislation chimerical, which is not copied from one which has already been realized; while the other apprehend that, in many cases, we may reason safely *a priori* from the known principles of human nature, combined with the particular circumstances of the times. The former are commonly understood as contending for experience in opposition to theory; the latter are accused of trusting to theory unsupported by experience; but it ought to be remembered, that the political theorist, if he proceeds cautiously and philosophically, founds his conclusions ultimately on experience, no less than the political empiric;—as the astronomer, who predicts an eclipse from his knowledge of the principles of the science, rests his expectation of the event on facts which have been previously ascertained by observation, no less than if he inferred it, without any reasoning, from his knowledge of a cycle.

There is, indeed, a certain degree of practical skill which habits of business alone can give, and without which the most enlightened politician must always appear to disadvantage when he attempts to carry his plans into execution. And as this skill is often (in consequence of the ambiguity of language) denoted by the word *experience*, while it is seldom possessed by those men, who have most carefully studied the theory of legislation, it has been very generally concluded, that politics is merely a matter of routine, in which philosophy is rather an obstacle to success. The statesman, who has been formed among official details, is compared to the practical engineer; the speculative legislator, to the theoretical mechanician who has passed his life among books and diagrams.—In order to ascertain how far this opinion is just, it may be of use to compare the art of legislation with those practical applications of mechanical principles by which the opposers of political theories have so often endeavoured to illustrate their reasonings.

I. In the first place, then, it may be remarked, that the errors to which we are liable, in the use of general mechanical principles, are owing, in most instances, to the effect which habits of abstraction are apt to have, in withdrawing the attention from those applications of our knowledge, by which alone we can learn to correct the imperfections of theory.—Such errors, therefore, are, in a peculiar degree, incident to men who have been led by natural taste, or by early habits, to prefer the speculations of the closet to the bustle of active life, and to the fatigue of minute and circumstantial observation.

In politics, too, one species of principles is often misapplied from an inattention to circumstances; those which are deduced from a few examples of particular governments, and which are occasionally quoted as universal political axioms, which every wise legislator ought to assume as the ground-work of his reasonings. But this abuse of general principles should by no means be ascribed, like the absurdities of the speculative mechanician, to over-refinement, and the love of theory; for it arises from weaknesses, which philosophy alone can remedy; an unenlightened veneration for maxims which are supposed to have the sanction of time in their favor, and a passive acquiescence in received opinions.

There is another class of principles, from which political conclusions have sometimes been deduced, and which, notwithstanding the common prejudice against them, are a much surer foundation for our reasonings: I allude, at present, to those principles which we obtain from an examination of the human constitution and of the general laws which regulate the course of human affairs; principles, which are certainly the result of a much more extensive induction, than any of the inferences that can be drawn from the history of actual establishments.

In applying, indeed, such principles to practice, it is necessary (as well as in mechanics) to pay attention to the peculiarities of the case, but it is by no means necessary to pay the same scrupulous attention to minute circumstances, which is essential in the mechanical arts, or in the management of private business. There is even a danger of dwelling too much on details, and of rendering the mind incapable of those abstract and comprehensive views of human affairs, which can alone furnish the statesman with fixed and certain maxims for the regulation of his conduct. "When a man," says Mr. Hume, "deliberates concerning his conduct in any *particular* affair, and forms schemes in politics, trade, economy, or any business in life, he never ought to draw his arguments too fine, or connect too long a chain of consequences together. Something is sure to happen, that will disconcert his reasoning, and produce an event different from what he expected. But when we reason upon *general* subjects, one may justly affirm, that our speculations can scarce ever be too fine, provided they are just; and that the difference betwixt a common man and a man of genius, is chiefly seen in the shallowness or depth of the principles upon which they proceed.—'Tis certain that general principles, however intricate they may seem, must always, if they are just and sound, prevail in the general course of things, though they may fail in particular cases, and it is the chief business of philosophers to regard the general course of things. I may add, that it is also the chief business of politicians; especially in the domestic government of the state, where the public good, which is, or ought to be, their object, depends on the concurrence of a multitude of cases, not, as in foreign politics, upon accidents and chances, and the caprices of a few persons." *

II. The difficulties which, in the mechanical arts, limit the application of general principles, remain invariably the same from age to age; and whatever observations we have made on them in the course of our past experience, lay a sure foundation for future practical skill, and supply, in so far as they reach, the defects of our theories. In the art of government, however, the practical difficulties which occur, are of a very different nature. They do not present to the statesman the same steady subject of examination, which the effects of friction do to the engineer. They arise chiefly from the passions and opinions of men, which are in a state of perpetual change; and, therefore, the address which is necessary to overcome them, depends less on the accuracy of our observations with respect to the past, than on the sagacity of our conjectures with respect to the future. In the present age, more particularly, when the rapid communication, and the universal diffusion of knowledge, by means of the press, render the situation of political societies essentially different from what it ever was formerly, and secure infallibly, against every accident, the progress of human reason; we may venture to predict, that they are to be the most successful statesmen, who, paying all due regard to past experience, search for the rules of their conduct chiefly in the peculiar circumstances of their own times, and in an enlightened anticipation of the future history of mankind.

III. In the mechanical arts, if, at any time, we are at a loss about the certainty of a particular fact, we have it always in our power to bring it to the test of experiment. But it is very seldom that we can obtain in this way any useful conclusion in politics: not only because it is dif-

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* Political Discourses.

ficult to find two cases in which the combinations of circumstances are precisely the same, but because our acquaintance with the political experience of mankind is much more imperfect than is commonly imagined. By far the greater part of what is called matter of fact in politics, is nothing else than theory: and, very frequently, in this science, when we think we are opposing experience to speculation, we are only opposing one theory to another.

To be satisfied of the truth of this observation, it is almost sufficient to recollect how extremely difficult it is to convey, by a general description, a just idea of the actual state of any government. That every such description must necessarily be more or less theoretical, will appear from the following remarks.

1. Of the governments which have hitherto appeared in the history of mankind, few or none have taken their rise from political wisdom, but have been the gradual result of time and experience, of circumstances and emergencies. In process of time, indeed, every government acquires a systematical appearance: for, although its different parts arose from circumstances which may be regarded as accidental and irregular, yet there must exist, among these parts, a certain degree of consistency and analogy. Wherever a government has existed for ages, and men have enjoyed tranquillity under it, it is a proof that its principles are not essentially at variance with each other. Every new institution which was introduced, must have had a certain reference to the laws and usages existing before, otherwise it could not have been permanent in its operations. If any one, contrary to the spirit of the rest, should have occasionally mingled with them, it must soon have fallen into desuetude and oblivion; and those alone would remain, which accorded in their general tendency. "Quæ usu obtinuêre," says Lord Bacon, "si non bona, at saltem apta inter se sunt."

The necessity of studying particular constitutions of government, by the help of systematical descriptions of them, (such descriptions for example, as are given of that of England by Montesquieu and Blackstone,) arises from the same circumstances, which render it expedient, in most instances, to study particular languages by consulting the writings of grammarians. In both cases, the knowledge we wish to acquire, comprehends an infinite number of particulars, the consideration of which, in detail, would distract the attention, and overload the memory. The systematical descriptions of politicians, like the general rules of grammarians, are in a higher degree useful for arranging and simplifying the objects of our study: but in both cases, we must remember, that the knowledge we acquire in this manner, is to be received with great limitations, and that it is no more possible to convey, in a systematical form, a just and complete idea of a particular government, than it is to teach a language completely by means of general rules, *without* any practical assistance from reading or conversation.

2. The nature and spirit of a government, as it is actually exercised at a particular period, cannot always be collected, perhaps it can seldom be collected, from an examination of written laws, or of the established forms of a constitution. These may continue the same for a long course of ages, while the government may be modified in its exercise, to a great extent, by gradual and *undescribable* alterations in the ideas, manners, and character of the people, or by a change in the relations which different orders of the community bear to each other. In every country whatever, beside the established laws, the political state of the people is affected by an infinite variety of circumstances, of which no words can convey a conception, and which are to be collected only from actual observation. Even in this way, it is not easy for a person who has received his education in one country, to study the government of another; on account of the difficulty which he must necessarily experience, in entering into the associations which influence the mind under a different system of manners, and in ascertaining (especially upon political subjects) the complex ideas conveyed by a foreign language.

In consequence of the causes which have now been mentioned, it sometimes happens, that there are essential circumstances in the actual state of a government, about which the constitutional laws are not only silent, but which are directly contrary to all the written laws, and to the spirit of the constitution as delineated by theoretical writers.

IV. The art of government differs from the mechanical arts in this, that, in the former, it is much more difficult to refer effects to their causes, than in the latter; and, of consequence, it rarely happens, even when we have an opportunity of seeing a political experiment made, that we can draw from it any certain inference, with respect to the justness of the principles by which it was suggested. In those complicated machines, to which the structure of civil society has been frequently compared, as all the different parts of which they are composed are subjected to physical laws, the errors of the artist must necessarily become apparent in the last result; but in the political system, as well as in the animal body, where the general constitution is sound and healthy, there is a sort of *vis medicatrix*, which is sufficient for the cure of partial disorders; and in the one case, as well as in the other, the errors of human art are frequently corrected and concealed by the wisdom of nature. Among the many false estimates which we daily make of human ability, there is perhaps none more groundless than the exaggerated conceptions we are apt to form of that species of political wisdom which is supposed to be the fruit of long experience and of professional habits. "Go;" said the chancellor Oxenstiern to his son, when he was sending him to a congress of ambassadors, and when the young man was expressing his diffidence of his own abilities for such an employment; "Go, and see with your own eyes, *Quam parvâ sapientiâ regitur mundus!*" The truth is (however paradoxical the remark may appear at first view,) that the speculative errors of statesmen are frequently less sensible in their effects, and of consequence, more likely to escape without detection, than those of individuals who occupy inferior stations in society. The effects of misconduct in private life are easily traced to their proper source, and therefore the world is seldom far wrong in the judgments which it forms of the prudence or of the imprudence of private characters. But in considering the affairs of a great nation, it is so difficult to trace events to their proper causes, and to distinguish the effects of political wisdom, from those which are the natural result of the situation of the people, that it is scarcely possible, excepting in the case of a very long administration, to appreciate the talents of a statesman from the success or the failure of his measures. In every society, too, which, in consequence of the general spirit of its government, enjoys the blessings of tranquillity and liberty, a great part of the political order which we are apt to ascribe to legislative sagacity, is the natural result of the selfish pursuits of individuals; nay, in every such society, (as I already hinted,) the natural tendency to improvement is so strong, as to overcome many powerful obstacles, which the imperfection of human institutions opposes to its progress.

From these remarks, it seems to follow, that, although in the mechanical arts, the errors of theory may frequently be corrected by repeated trials, without having recourse to general principles, yet, in the machine of government, there is so great a variety of powers at work, beside the influence of the statesman, that it is vain to expect the art of legislation should be carried to its greatest possible perfection by experience alone.

Still however, it may be said, that in the most imperfect governments of modern Europe, we have an experimental proof, that they secure, to a very great degree, the principal objects of the social union. Why hazard these certain advantages, for the uncertain effects of changes, suggested by mere theory; and not rest satisfied with a measure of political happiness, which appears, from the history of the world, to be greater than has commonly fallen to the lot of nations?

With those who would carry their zeal against reformation so far, it is impossible to argue; and it only remains for us to regret, that the number of such reasoners has, in all ages of the world, been so great, and their influence on human affairs so extensive.

"There are some men," says Dr. Johnson, "of narrow views, and grovelling conceptions, who, without the instigation of personal malice, treat every new attempt as wild and chimerical; and look upon every endeavour to depart from the beaten track, as the rash effort of a warm imagination, or the glittering speculation of an exalted mind, that may please and dazzle for a time, but can produce no real or lasting advantage.

"These men value themselves upon a perpetual skepticism; upon believing nothing but their own senses; upon calling for demonstration where it cannot possibly be obtained; and, sometimes, upon holding out against it when it is laid before them; upon inventing arguments against the success of any new undertaking; and, where arguments cannot be found, upon treating it with contempt and ridicule.

"Such have been the most formidable enemies of the great benefactors of the world; for their notions and discourse are so agreeable to the lazy, the envious, and the timorous, that they seldom fail of becoming popular, and directing the opinions of mankind." *

With respect to this skeptical disposition, as applicable to the present state of society, it is of importance to add, that, in every government, the stability and the influence of established authority must depend on the coincidence between its measures and the tide of public opinion; and that, in modern Europe, in consequence of the invention of printing, and the liberty of the press, public opinion has acquired an ascendant in human affairs, which it never possessed in those states of antiquity from which most of our political examples are drawn. The danger, indeed, of sudden and rash innovations cannot be too strongly inculcated, and the views of those men who are forward to promote them, cannot be reprobated with too great severity. But it is possible also to fall into the opposite extreme, and to bring upon society the very evils we are anxious to prevent, by an obstinate opposition to those gradual and necessary reformations which the genius of the times demands.

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* Life of Drake, by Dr. Johnson.

The violent revolutions which, at different periods, have convulsed modern Europe, have arisen, not from a spirit of innovation in sovereigns and statesmen; but from their bigoted attachment to antiquated forms and to principles borrowed from less enlightened ages. It is this reverence for abuses which have been sanctioned by time, accompanied with an inattention to the progress of public opinion, which has, in most instances, blinded the rulers of mankind, till government has lost all its efficiency; and till the rage of innovation has become too general and too violent, to be satisfied with changes, which, if proposed at an earlier period, would have united, in the support of established institutions, every friend to order, and to the prosperity of his country.

These observations I state with the greater confidence, that the substance of them is contained in the following aphorisms of Lord Bacon; a philosopher who (if we except, perhaps, the late Mr. Turgot) seems, more than any other, to have formed enlightened views with respect to the possible attainments of mankind; and whose fame cannot fail to increase as the world grows older, by being attached, not to a particular system of variable opinions, but to the general and infallible progress of human reason.

"Quis novator tempus imitatur, quod novationes ita insinuat, ut sensus fallant?

"Novator maximus tempus; quidni igitur tempus imitemur?

"Morosa morum retentio res turbulenta est, æque ac novitas.

"Cum per se res mutentur in deterius, si consilio in melius non mutentur, quis finis erit mali?"

The general conclusion to which these observations lead, is sufficiently obvious; that the perfection of political wisdom does not consist in an indiscriminate zeal against reformers, but in a gradual and prudent accommodation of established institutions to the varying opinions, manners, and circumstances of mankind. In the actual application, however, of this principle, many difficulties occur, which it requires a very rare combination of talents to surmount: more particularly in the present age, when the press has, to so wonderful a degree, emancipated human reason from the tyranny of ancient prejudices, and has roused a spirit of free discussion, unexampled in the history of former times.

That this sudden change in the state of the world should be accompanied with some temporary disorders, is by no means surprising. While the multitude continue imperfectly enlightened, they will be occasionally misled by the artifices of demagogues; and even good men, intoxicated with ideas of theoretical perfection, may be expected sometimes to sacrifice, unintentionally, the tranquillity of their contemporaries, to an over-ardent zeal for the good of posterity. Notwithstanding, however, these evils, which every friend to humanity must lament, I would willingly believe, that the final effects resulting from this spirit of reformation, cannot fail to be favorable to human happiness; and there are some peculiarities in the present condition of mankind, which appear to me to justify more sanguine hopes upon the subject, than it would have been reasonable for a philosopher to indulge at any former period. An attention to these peculiarities is absolutely necessary to enable us to form a competent judgment on the question to which the foregoing observations relate; and it leads to the illustration of a doctrine to which I have frequently referred in this work, the gradual improvement in the condition of the species, which may be expected from the progress of reason and the diffusion of knowledge.

Among the many circumstances favorable to human happiness in the present state of the world, the most important, perhaps, is, that the same events which have contributed to loosen the foundations of the ancient fabrics of despotism, have made it practicable in a much greater degree than it ever was formerly, to reduce the principles of legislation to a science, and to anticipate the probable course of popular opinions. It is easy for the statesman to form to himself a distinct and steady idea of the ultimate objects at which a wise legislator ought to aim, and to foresee that modification of the social order, to which human affairs have, of themselves, a tendency to approach; and, therefore, his practical sagacity and address are limited to the care of accomplishing the important ends which he has in view, as effectually and as rapidly as is consistent with the quiet of individuals, and with the rights arising from actual establishments.

In order to lay a solid foundation for the science of politics, the first step ought to be, to ascertain that form of society which is perfectly agreeable to nature and to justice; and what are the principles of legislation necessary for maintaining it. Nor is the inquiry so difficult as might at first be apprehended; for it might be easily shown, that the greater part of the political disorders which exist among mankind, do not arise from a want of foresight in politicians, which has rendered their laws too general, but from their having trusted too little to the operation of those simple institutions which nature and justice recommend; and, of consequence, that, as society advances to its perfection, the number of laws may be expected to diminish, instead of increasing, and the science of legislation to be gradually simplified.

The economical system which, about thirty years ago, employed the speculations of some ingenious men in France, seems to me to have been the first attempt to ascertain this ideal perfection of the social order; and the light which, since that period, has been thrown on the subject, in different parts of Europe, is a proof of what the human mind is able to accomplish in such inquiries, when it has once received a proper direction. To all the various tenets of these writers, I would, by no means, be understood to subscribe; nor do I consider their system as so perfect in every different part, as some of its more sanguine admirers have represented it to be. A few of the most important principles of political economy, they have undoubtedly established with demonstrative evidence; but what the world is chiefly indebted to them for, is the commencement which they have given to a new branch of science, and the plan of investigation which they have exhibited to their successors. A short account of what I conceive to be the scope of their speculations will justify these remarks, and will comprehend every thing which I have to offer at present, in answer to the question by which they were suggested. Such an account I attempt with the greater satisfaction, that the leading views of the earliest and most enlightened patrons of the economical system have, in my opinion, been not more misrepresented by its opponents, than misapprehended by some who have adopted its conclusions.*

In the first place, then, I think it of importance to remark, that the object of the economical system ought by no means to be confounded (as I believe it commonly is in this country) with that of the Utopian plans of government, which have, at different times, been offered to the world; and which have so often excited the just ridicule of the more sober and reasonable inquirers. Of these plans, by far the greater number proceed on the supposition, that the social order is entirely the effect of human art; and that wherever this order is imperfect, the evil may be traced to some want of foresight on the part of the legislator; or to some inattention of the magistrate to the complicated structure of that machine of which he regulates the movements. The projects of reform, therefore, which such plans involve, are, in general, well entitled to all the ridicule and contempt they have met with; inasmuch as they imply an arrogant and presumptuous belief in their authors, of the superiority of their own political sagacity, to the accumulated wisdom of former ages. The case is very different with the economical system; of which the leading views (so far as I am able to judge) proceed on the two following suppositions: First, that the social order is in the most essential respects, the result of the wisdom of nature, and not of human contrivance; and, therefore, that the proper business of the politician, is not to divide his attention among all the different parts of a machine, which is by far too complicated for his comprehension; but by protecting the rights of individuals, and by allowing to each as complete a liberty as is compatible with the perfect security of the rights of his fellow citizens; to remove every obstacle which the prejudices and vices of men have opposed to the establishment of that order which society has a tendency to assume. Secondly, that, in proportion to the progress and the diffusion of knowledge, those prejudices, on a skilful management of which all the old systems of policy proceeded, must gradually disappear; and, consequently, that (whatever may be his predilection for ancient usages) the inevitable course of events imposes on the politician the necessity of forming his measures on more solid and permanent principles, than those by which the world has hitherto been governed. Both of these suppositions are of modern origin. The former, so far as I know, was first stated and illustrated by the French economists. The latter has been obviously suggested by that rapid improvement which has actually taken place in every country of Europe where the press has enjoyed a moderate degree of liberty.

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* See Note (N.)

It may be farther remarked, with respect to the greater part of the plans proposed by Utopian projectors, that they proceed on the supposition of a miraculous reformation in the moral character of a people, to be affected by some new system of education. All such plans (as Mr. Hume has justly observed) may be safely abandoned as impracticable and visionary. But this objection does not apply to the economical system, the chief expedient of which, for promoting moral improvement, is not that education which depends on the attention and care of our instructers, but an education which necessarily results from the political order of society. "How ineffectual," said the Roman poet, "are the wisest laws, if they be not supported by good morals?" How ineffectual (say the Economists) are all our efforts to preserve the morals of a people, if the laws which regulate the political order, doom the one half of mankind to indigence, to fraud, to servility, to ignorance, to superstition; and the other half to be the slaves of all the follies and vices which result from the insolence of rank, and the selfishness of opulence? Suppose for a moment, that the inordinate accumulation of wealth in the hands of individuals, which we every where meet with in modern Europe, were gradually diminished by abolishing the laws of entail, and by establishing a perfect freedom of commerce and of industry; it is almost self-evident, that this simple alteration in the order of society, an alteration which has been often demonstrated to be the most effectual and the most infallible measure for promoting the wealth and population of a country, would contribute, more than all the labors of moralists, to secure the virtue and the happiness of all the classes of mankind. It is worthy too of remark, that such a plan of reformation does not require, for its accomplishment, any new and complicated institutions, and therefore does not proceed upon any exaggerated conception of the efficacy of human policy. On the contrary, it requires only (like most of the other expedients proposed by this system) the gradual abolition of those arbitrary and unjust arrangements, by which the order of nature is disturbed.

Another mistaken idea concerning the economical system is, that it is founded entirely upon theory, and unsupported by facts. That this may be the case with respect to some of its doctrines, I shall not dispute: but, in general, it may be safely affirmed, that they rest on a broader basis of facts, than any other political speculations which have been yet offered to the world; for they are founded, not on a few examples collected from the small number of governments of which we possess an accurate knowledge, but on those laws of human nature, and those maxims of common sense, which are daily verified in the intercourse of private life.

Of those who have speculated on the subject of legislation, by far the greater part seem to have considered it as a science *sui generis;* the first principles of which can be obtained in no other way, than by an examination of the conduct of mankind in their political capacity. The Economists, on the contrary, have searched for the causes of national prosperity, and national improvement, in those arrangements, which our daily observations show to be favorable to the prosperity and to the improvement of individuals. The former resemble those philosophers of antiquity, who, affirming that the phenomena of the heavens are regulated by laws peculiar to themselves, discouraged every attempt to investigate their physical causes, which was founded upon facts collected from common experience. The latter have aimed at accomplishing a reformation in politics, similar to what Kepler and Newton accomplished in astronomy; and, by subjecting to that common sense, which guides mankind in their private concerns, those questions, of which none were supposed to be competent judges, but men initiated in the mysteries of government, have given a beginning to a science which has already extended very widely our political prospects; and which, in its progress, may probably afford an illustration, not less striking than that which physical astronomy exhibits, of the simplicity of those laws by which the universe is governed. When a political writer, in order to expose the folly of those commercial regulations, which aim at the encouragement of domestic industry by restraints on importation, appeals to the maxims upon which men act in private life; when he remarks, that the tailor does not attempt to make his own shoes, but buys them of the shoemaker, that the shoemaker does not attempt to make his own clothes, but employs a tailor; and when he concludes, that what is prudence in the conduct of every private family, can scarcely be folly in that of a great kingdom,* he may undoubtedly be said, in one sense, to indulge in theory, as he calls in question the utility of institutions which appear, from the fact, to be not incompatible with a certain degree of political prosperity. But, in another sense, and in a much more philosophical one, he may be said to oppose to the false theories of statesmen, the common sense of mankind, and those maxims of expediency, of which every man may verify the truth by his own daily observation.

There is yet another mistake, (of still greater consequence perhaps, than any of those I have mentioned,) which has misled most of the opponents, and even some of the friends, of the economical system; an idea that it was meant to exhibit a political order, which is really attainable in the present state of Europe. So different from this were the views of its most enlightened advocates, that they have uniformly rested their only hopes of its gradual establishment in the world, on that influence in the conduct of human affairs, which philosophy may be expected gradually to acquire, in consequence of the progress of reason and civilization. To suppose that a period is ever to arrive, when it shall be realized in its full extent, would be the height of enthusiasm and absurdity; but it is surely neither enthusiasm nor absurdity to affirm, that governments are more or less perfect, in proportion to the greater or smaller number of individuals to whom they afford the means of cultivating their intellectual and moral powers, and whom they admit to live together on a liberal footing of equality;—or even to expect, that, in proportion to the progress of reason, governments will actually approach nearer and nearer to this description.

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* See Mr. Smith's profound and original "Inquiry into the Nature and Causes of the Wealth of Nations."

To delineate that state of political society to which governments may be expected to approach nearer and nearer as the triumphs of philosophy extend, was, I apprehend, the leading object of the earliest and most enlightened patrons of the economical system. It is a state of society, which they by no means intended to recommend to particular communities, as the most eligible they could adopt at present; but as an ideal order of things, to which they have a tendency of themselves to approach, and to which it ought to be the aim of the legislator to facilitate their progress. In the language of mathematicians, it forms a *limit* to the progressive improvement of the political order; and, in the mean time, it exhibits a standard of comparison, by which the excellence of particular institutions may be estimated.

According to the view which has now been given of the economical system, its principles appear highly favorable to the tranquillity of society; inasmuch as, by inspiring us with a confidence in the triumph which truth and liberty must infallibly gain in the end over error and injustice, it has a tendency to discourage every plan of innovation which is to be supported by violence and bloodshed. And, accordingly, such has always been the language of those who were best acquainted with the views of its authors. "If we attack oppressors before we have taught the oppressed," says one of the ablest of its present supporters,* "we shall risk *the loss* of liberty, and rouse them to oppose the progress of reason. History affords proofs of this *truth*. How often, in spite of the efforts of the friends of freedom, has the event of a single battle reduced nations to the slavery of ages!

"And what is the kind of liberty enjoyed by those nations, which have recovered it by force of arms, and not by the influence of philosophy? Have not most of them confounded the forms of republicanism with the enjoyment of right, and the despotism of numbers with liberty? How many laws, contrary to the rights of nature, have dishonored the code of every people which has recovered its freedom during those ages in which reason was still in its infancy!"

"Why not profit by this fatal experience, and wisely wait the progress of knowledge, in order to obtain freedom more effectual, more substantial, and more peaceful? Why pursue it by blood and inevitable confusion, and trust that to chance, which time must certainly, and without bloodshed, bestow? A fortunate struggle may, indeed, relieve us of many grievances under which we labor at present, but if we wish to secure the perfection and the permanence of freedom, we must patiently wait the period when men, emancipated from their prejudices, and guided by philosophy, shall be rendered worthy of liberty, by comprehending its claims." †

Nor is it the employment of violent and sanguinary means alone, in order to accomplish political innovations, that this enlightened and humane philosophy has a tendency to discourage. By extending our views to the whole plan of civil society, and showing us the mutual relations and dependencies of its most distant parts, it cannot fail to check that indiscriminate zeal against established institutions, which arises from partial views of the social system; as well as to produce a certain degree of skepticism with respect to every change, the success of which is not insured by the prevailing ideas and manners of the age. Sanguine and inconsiderate projects of reformation are frequently the offspring of clear and argumentative and systematical understandings; but rarely of comprehensive minds. For checking them, indeed, nothing is so effectual as a general survey of the complicated structure of society. Even although such a survey should be superficial, provided it be conducted on an extensive scale, it is more useful, at least for this purpose, than the most minute and successful inquiries, which are circumscribed within a narrow circle. If it should teach us nothing else, it will at least satisfy us of the extreme difficulty of predicting, with confidence, the remote effects of new arrangements; and that the perfection of political wisdom consists not in encumbering the machine of government with new contrivances to obviate every partial inconvenience, but in removing gradually, and imperceptibly, the obstacles which disturb the order of nature, and (as Mr. Addison somewhere expresses it) "in grafting upon her institutions."

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* M Condorcet.

† To some of my readers it may appear trifling to remark, that, in availing myself of an occasional coincidence of sentiment with a contemporary author, I would not be understood to become responsible for the consistency of his personal conduct with his philosophical principles, nor to subscribe to any one of his opinions, but those to which I have expressed my assent by incorporating them with my own composition. [*Note to second Edition.*]

When the economical system, indeed, is first presented to the mind, and when we compare the perfection which it exhibits, with the actual state of human affairs, it is by no means unnatural, that it should suggest plans of reformation too violent and sudden to be practicable. A more complete acquaintance, however, with the subject, will effectually cure these first impressions, by pointing out to us the mischiefs to be apprehended from an injudicious combination of theoretical perfection with our established laws, prejudices, and manners. As the various unnatural modes and habits of living, to which the bodily constitution is gradually reconciled by a course of luxurious indulgences, have such a tendency to correct each other's effects, as to render a partial return to a more simple regimen, a dangerous, and, sometimes, a fatal experiment; so it is possible, that many of our imperfect political institutions may be so accommodated to each other, that a partial execution of the most plausible and equitable plans of reformation might tend, in the first instance, to frustrate those important purposes which we are anxious to promote. Is it not possible, for example, that the influence which is founded on a respect for hereditary rank, may have its use in counteracting that aristocracy which arises from inequality of wealth, and which so many laws and prejudices conspire to support? That the former species of influence is rapidly declining of itself, in consequence of the progress which commerce and philosophy have already made, is sufficiently obvious; and, I think, it may reasonably be doubted, whether a well-wisher to mankind would be disposed to accelerate its destruction, till the true principles of political economy are completely understood and acknowledged by the world.

Various other examples might be produced, to illustrate the dangers to be apprehended from the partial influence of general principles in politics; or, in other words, from an exclusive attention to particular circumstances in the political order, without comprehensive views of the subject. It is only upon a limited mind, therefore, that such studies will produce a passion for violent innovations. In more comprehensive and enlightened understandings, their natural effect is caution and diffidence with respect to the issue of every experiment, of which we do not perceive distinctly all the remote consequences. Nor is this caution at all inconsistent with a firm confidence in the certainty of that triumph which truth and liberty must infallibly gain in the end over error and injustice. On the contrary, it is a natural and obvious consequence of such a conviction; inasmuch as the same arguments on which this conviction is founded, prove to us, that the progress of mankind towards the perfection of the social order, must necessarily, in every case, be gradual, and that it must be diversified in the course it takes, according to the situations and characters of nations. To direct, and, as far as possible, to accelerate, this progress, ought to be the great aim of the enlightened statesman, and, indeed, of every man who wishes well to his species; but it is necessary for him always to remember, that considerable alterations in the established order, are very seldom to be effected immediately and directly by political regulations; and that they are, in all cases, most successful and most permanent, when they are accomplished gradually by natural causes, freed from those restraints which had formerly checked their operation. In the governments, indeed, of modern Europe, it is much more necessary to abolish old institutions, than to introduce new ones; and if this reformation be kept steadily in view, and not pushed farther at any time than circumstances render expedient, or the ideas of the times recommend, the essential principles of a more perfect order of things will gradually establish themselves, without any convulsion.

According to this view of the subject, the speculation concerning the perfect order of society, is to be regarded merely as a description of the ultimate objects at which the statesman ought to aim. The tranquillity of his administration, and the immediate success of his measures, depend on his good sense, and his practical skill. And his theoretical principles only enable him to direct his measures steadily and wisely to promote the improvement and happiness of mankind, and prevent him from being ever led astray from these important objects, by more limited views of temporary expedience.*

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* The foregoing observations on the general aim of the Economical System refer solely (as must appear evident to those who have perused them with attention) to the doctrines it contains on the article of *Political Economy*. *The Theory of Government* which it inculcates, is of the most dangerous tendency; recommending in strong and unqualified terms, an unmixed despotism; and reprobating all constitutional checks on the sovereign authority. Many English writers, indeed, with an almost incredible ignorance of the works which they have presumed to censure, have spoken of them, as if they encouraged political principles of a very different complexion: but the truth is, that the disciples of *Quesnay* (without a single exception) carried their zeal for the power of the monarch, and what they called the *Unity of Legislation*, to so extravagant a length, as to treat with contempt those mixed establishments which allow any share whatever of legislative influence to the representatives of the people. On the one hand, the evidence of this system appeared to its partisans so com-

Before closing this disquisition, it may be proper for me to attempt to obviate a little more fully than I have done, an objection which has been frequently drawn from the past experience of mankind, against that supposition of their progressive improvement, on which all the foregoing reasonings proceed. How mournful are the vicissitudes which history exhibits to us, in the course of *human* affairs; and how little foundation do they afford to our sanguine prospects concerning futurity! If, in those parts of the earth which were formerly inhabited by barbarians, we now see the most splendid exertions of genius and the happiest forms of civil policy, we behold others which, in ancient times, were the seats of science, of civilization, and of liberty, at present immersed in superstition, and laid waste by despotism. After a short period of civil, of military, and of literary glory, the prospect has changed at once: the career of degeneracy has begun, and has proceeded till it could advance no farther; or some unforeseen calamity has occurred, which has obliterated for a time, all memory of former improvements, and has condemned mankind to retrace, step by step, the same path by which their forefathers had risen to greatness. In a word, on such a retrospective view of human affairs, man appears to be the mere sport of fortune and of accident; or rather, he appears to be doomed, by the condition of his nature, to run alter-

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plete and irresistible, that they flattered themselves, monarchs would soon see with an intuitive conviction the identity of their own interests with those of the nations they are called to govern; and, on the other hand, they contended, that it is only under the strong and steady government of a race of hereditary princes, undistracted by the prejudices and local interests which warp the deliberations of popular assemblies, that a gradual and systematical approach can be made to the perfection of law and policy. The very first of *Quesnay's* maxims states as a fundamental principle, that the sovereign authority, unrestrained by any constitutional checks or balances, should be lodged in the hands of a single person; and the same doctrine is maintained zealously by all his followers; by none of them more explicitly than by *Mercier de la Rivière*, whose treatise on "the natural and essential order of political societies," might have been expected to attract some notice in this country, from the praise which Mr. Smith has bestowed on the perspicuity of his style, and the distinctness of his arrangement.

If some individuals who formerly professed an enthusiastic attachment to the doctrines of this sect, have, at a later period of their lives distinguished themselves by an enthusiasm no less ardent in opposition to the principles advanced in their writings, the fact only affords an additional illustration of a truth verified by daily experience, that the most solid foundation for political consistency is a spirit of moderation, and that the most natural and easy of all transitions, is from the violence and intolerance of one extreme to those of another. [*Note to second Edition.*]

nately the career of improvement and of degeneracy; and to realize the beautiful but melancholy fable of Sisyphus, by an eternal renovation of hope and of disappointment.

In opposition to these discouraging views of the state and prospects of man, it may be remarked in general, that in the course of these latter ages, a variety of events have happened in the history of the world, which render the condition of the human race essentially different from what it ever was among the nations of antiquity; and which, of consequence, render all our reasonings concerning their future fortunes, in so far as they are founded merely on their past experience, unphilosophical and inconclusive. The alterations which have taken place in the art of war, in consequence of the invention of fire-arms, and of the modern science of fortification, have given to civilized nations a security against the irruptions of barbarians, which they never before possessed. The more extended, and the more constant intercourse, which the improvements in commerce and in the art of navigation have opened, among the distant quarters of the globe, cannot fail to operate in undermining local and national prejudices, and in imparting to the whole species the intellectual acquisitions of each particular community. The accumulated experience of ages has already taught the rulers of mankind, that the most fruitful and the most permanent sources of revenue are to be derived, not from conquered and tributary provinces, but from the internal prosperity and wealth of their own subjects:—and the same experience now begins to teach nations, that the increase of their own wealth so far from depending on the poverty and depression of their neighbours, is intimately connected with their industry and opulence; and consequently, that those commercial jealousies, which have hitherto been so fertile a source of animosity among different states, are founded entirely on ignorance and prejudice. Among all the circumstances, however, which distinguish the present state of mankind from that of ancient nations, the invention of printing is by far the most important; and, indeed, this single event, independently of every other, is sufficient to change the whole course of human affairs.

The influence which printing is likely to have on the future history of the word, has not, I think, been hitherto examined, by philosophers, with the attention which the importance of the subject deserves. One reason for this may, probably, have been, that, as the invention has never been made but once, it has been considered rather as the effect of a fortunate accident, than as the result of those general causes on which the progress of society seems to depend. But it may be reasonably questioned, how far this idea be just. For, although it should be allowed, that the invention of printing was accidental, with respect to the individual who made it, it may, with truth, be considered as the natural result of a state of the world, when a number of great and contiguous nations are all engaged in the study of literature, in the pursuit of science, and in the practice of the arts; insomuch, that I do not think it extravagant to affirm, that, if this invention had not been made by the particular person tò whom it is ascribed, the same art, or some analogous art, answering a similar purpose, would have infallibly been invented by some other person, and at no very distant period. The art of printing, therefore, is entitled to be considered as a step in the natural history of man, no less than the art of writing; and they who are skeptical about the future progress of the race, merely in consequence of its past history, reason as unphilosophically, as a member of a savage tribe, who, deriving his own acquaintance with former times from oral tradition only, should affect to call in question the efficacy of written records, in accelerating the progress of knowledge and of civilization.

What will be the particular effects of this invention, (which has been hitherto much checked in its operation by the restraints on the liberty of the press in the greater part of Europe,) it is beyond the reach of human sagacity to conjecture; but, in general, we may venture to predict with confidence, that in every country, it will gradually operate to widen the circle of science and civilization; to distribute more equally, among all the members of the community, the advantages of the political union; and to enlarge the basis of equitable governments, by increasing the number of those who understand their value, and are interested to defend them. The science of legislation, too, with all the other branches of knowledge which are connected with human improvement, may be expected to advance with rapidity; and, in proportion as the opinions and institutions of men approach to truth and to justice, they will be secured against those revolutions to which human affairs have albeen hitherto subject. *Opinionum enim commenta delet dies, naturæ judicia confirmat.*

The revolutions incident to the democratical states of antiquity furnish no solid objection to the foregoing observations: for none of these states enjoyed the advantages which modern times derive from the diffusion, and from the rapid circulation of knowledge. In these states, most of the revolutions which happened, arose from the struggles of demagogues, who employed the passions of the multitude in subserviency to their own interest and ambition: and to all of them, the ingenious and striking remark of Hobbes will be found applicable; that "Democracy is nothing but an aristocracy of orators, interrupted sometimes by the temporary monarchy of a single orator." While this continued to be the case, democratical constitutions were, undoubtedly, the most unfavorable of any to the tranquillity of mankind: and the only way to preserve the order of society, was, by skilfully balancing against each other, the prejudices, and the separate interests, of different orders of citizens. That such balances, however, will every day become less necessary for checking the turbulence of the democratical spirit in free governments, appears probable from this; that among the various advantages to be expected from the liberty of the press, one of the greatest is, the effect which it must necessarily have in diminishing the influence of popular eloquence, both by curing men of those prejudices upon which it operates, and by subjecting it to the irresistible control of enlightened opinions. In the republican states of antiquity, the eloquence of demagogues was indeed a dangerous engine of faction, while it aspired to govern nations by its unlimited sway in directing popular councils. But, now, when the effusions of the orator are, by means of the press, subjected to the immediate tribunal of an inquisitive age, the eloquence of legislative assemblies is forced to borrow its tone from the spirit of the times; and if it retain its ascendant in human affairs, it can only be, by lending its aid to the prevailing cause, and to the permanent interests of truth and of freedom.

Of the progress which may yet be made in the different branches of moral and political philosophy, we may form some idea, from what has already happened in physics, since the time that Lord Bacon united, in one useful direction, the labors of those who cultivate that science. At the period when he wrote, physics was certainly in a more hopeless state, than that of moral and political philosophy in the present age. A perpetual succession of chimerical theories had, till then, amused the world; and the prevailing opinion was, that the case would continue to be the same forever. Why then should we despair of the competency of the human faculties to establish solid and permanent systems, upon other subjects, which are of still more serious importance? Physics, it is true, is free from many difficulties which obstruct our progress in moral and political inquiries; but, perhaps, this advantage may be more than counterbalanced by the tendency they have to engage a more universal, and a more earnest attention, in consequence of their coming home more immediately to our "business and our bosoms." When these sciences, too, begin to be prosecuted on a regular and systematical plan, their improvement will go on with an accelerated velocity; not only as the number of speculative minds will be every day increased by the diffusion of knowledge, but as an acquaintance with the just rules of inquiry will more and more place important discoveries within the reach of ordinary understandings.—"Such rules," says Lord Bacon, "do, in some sort, equal men's wits, and leave no great advantage or preeminence to the perfect and excellent motions of the spirit. To draw a straight line, or to describe a circle, by aim of hand only, there must be a great difference between an unsteady and an unpractised hand, and a steady and practised; but, to do it by rule or compass, it is much alike."

Nor must we omit to mention the value which the art of printing communicates to the most limited exertions of literary industry, by treasuring them up as materials for the future examination of more enlightened inquirers. In this respect, the press bestows upon the sciences, an advantage somewhat analogous to that which the mechanical arts derive from the division of labor. As in these arts the exertions of an uninformed multitude are united by the comprehensive skill of the artist, in the accomplishment of effects astonishing by their magnitude, and by the complicated ingenuity they display, so, in the sciences, the observations and conjectures of obscure individuals on those subjects which are level to their capacities, and which fall under their own immediate notice, accumulate for a course of years, till at last, some philosopher arises, who combines these scattered materials, and exhibits, in his system, not merely the force of a single mind, but the intellectual power of the age in which he lives.

It is upon these last considerations, much more than on the efforts of original genius, that I would rest my hopes of the progress of the race. What genius alone could accomplish in science, the world has already seen: and I am ready to subscribe to the opinion of those who think, that the splendor of its past exertions is not likely to be obscured by the fame of future philosophers. But the experiment yet remains to be tried, what lights may be thrown on the most important of all subjects, by the free discussions of inquisitive nations, unfettered by prejudice, and stimulated in their inquiries by every motive that can awaken whatever is either generous or selfish in human nature. How trifling are the effects which the bodily strength of an individual is able to produce, (however great may be his natural endowments,) when compared with those which have been accomplished by the conspiring force of an ordinary multitude? It was not the single arm of a Theseus, or a Hercules, but the hands of such men as ourselves, that, in ancient Egypt, raised those monuments of architecture, which remain from age to age, to attest the wonders of combined and persevering industry, and, while they humble the importance of the individual, to exalt the dignity, and to animate the labors of the species.

These views with respect to the probable improvement of the world, are so conducive to the comfort of those who entertain them, that even, although they were founded in delusion, a wise man would be disposed to cherish them. What should have induced some respectable writers to controvert them, with so great an asperity of expression, it is not easy to conjecture, for whatever may be thought of their truth, their practical tendency is surely favorable to human happiness; nor can that temper of mind, which disposes a man to give them a welcome reception, be candidly suspected of designs hostile to the interests of humanity. One thing is certain, that the greatest of all obstacles to the improvement of the world, is that prevailing belief of its improbability, which damps the exertions of so many individuals; and that, in proportion as the contrary opinion becomes general, it realizes the event which it leads us to anticipate. Surely, if any thing can have a tendency to call forth in the public service the exertions of individuals, it must be an idea of the magnitude of that work in which they are conspiring, and a belief of the permanence of those benefits, which they confer on mankind by every attempt to inform and to enlighten them. As in ancient Rome, therefore, it was regarded as the mark of a good citizen, never to despair of the fortunes of the republic;—so the good citizen of the world, whatever may be the political aspect of his own times, will never despair of the fortunes of the human race, but will act upon the conviction, that prejudice, slavery, and corruption, must gradually give way to truth, liberty, and virtue; and that, in the moral world, as well as in the material, the farther our observations extend, and the longer they are continued, the more we shall perceive of order and of benevolent design in the universe.

Nor is this change in the condition of man, in consequence of the progress of reason, by any means contrary to the general analogy of his natural history. In the infancy of the individual, his existence is preserved by instincts, which disappear afterwards, when they are no longer necessary. In the savage state of our species, there are instincts which seem to form a part of the human constitution, and of which no traces remain in those periods of society, in which their use is superseded by a more enlarged experience. Why then should we deny the probability of something similar to this, in the history of mankind considered in their political capacity? I have already had occasion to observe, that the governments which the world has hitherto seen, have seldom or never taken their rise from deep laid schemes of human policy. In every state of society which has yet existed, the multitude has, in general, acted from the immediate impulse of passion, or from the pressure of their wants and necessities; and, therefore, what we commonly call the political order, is, at least in a great measure, the result of the passions and wants of man, combined with the circumstances of his situation, or, in other words, it is chiefly the result of the wisdom of nature. So beautifully, indeed, do these passions and circumstances act in subserviency to her designs, and so invariably have they been found, in the history of past ages, to conduct him in time to certain beneficial arrangements, that we can hardly bring ourselves to believe that the end was not foreseen by those who were engaged in the pursuit. Even in those rude periods of society, when, like the lower animals, he follows blindly his instinctive principles of action, he is led by an invisible hand, and contributes his share to the execution of a plan, of the nature and advantages of which he has no conception. The operations of the bee, when it begins for the first time to form its cell, conveys to us a striking image of the efforts of unenlightened man, in conducting the operations of an infant government.

A great variety of prejudices might be mentioned, which are found to prevail universally among our species in certain periods of society, and which seem to be essentially necessary for maintaining its order, in ages when men are unable to comprehend the purposes for which governments are instituted. As society advances, these prejudices gradually lose their influence on the higher classes, and would probably soon disappear altogether, if it were not found expedient to prolong their existence, as a source of authority over the multitude. In an age, however, of universal and unrestrained discussion, it is impossible that they can long maintain their empire; nor ought we to regret their decline, if the important ends to which they have been subservient in the past experience of mankind, are found to be accomplished by the growing light of philosophy. On this supposition, a history of human prejudices, as far as they have supplied the place of more enlarged political views, may, at some future period, furnish to the philosopher a subject of speculation, no less pleasing and instructive, than that beneficent wisdom of nature, which guides the operations of the lower animals, and which, even in our own species, takes upon itself the care of the individual in the infancy of human reason.

I have only to observe farther, that, in proportion as these prospects, with respect to the progress of reason, the diffusion of knowledge, and the consequent improvement of mankind, shall be realized, the political history of the world will be regulated by steady and uniform causes, and the philosopher will be enabled to form probable conjectures with respect to the future course of human affairs.

It is justly remarked by Mr. Hume, that "what depends on a few persons is, in a great measure, to be ascribed to chance, or secret and unknown causes: what arises from a great number, may often be accounted for by determinate and known causes." "To judge by this rule," he continues, "the domestic and the gradual revolutions of a state must be a more proper object of reasoning and observation, than the foreign and the violent, which are commonly produced by single persons, and are more influenced by whim, folly, or caprice, than by general passions and interests. The depression of the lords, and rise of the commons in England, after the statutes of alienation and the increase of trade and industry, are more easily accounted for by general principles, than the depression of the Spanish, and rise of the French monarchy, after the death of Charles the Fifth. Had Harry the Fourth, Cardinal Richelieu, and Louis the Fourteenth, been Spaniards; and Philip the Second, Third, and Fourth, and Charles the Second, been Frenchmen; the history of these nations had been entirely reversed."

From these principles, it would seem to be a necessary consequence, that, in proportion as the circumstances shall operate which I have been endeavouring to illustrate, the whole system of human affairs, including both the domestic order of society in particular states, and the relations which exist among different communities, in consequence of war and negotiation, will be subjected to the influence of causes which are "known and determinate." Those domestic affairs, which, according to Mr. Hume, are already proper subjects of reasoning and observation, in consequence of their dependence on general interests and passions, will become so, more and more, daily, as prejudices shall decline, and knowledge shall be diffused among the lower orders: while the relations among different states, which have depended hitherto, in a great measure, on the "whim, folly, and caprice" of single persons, will be gradually more and more regulated by the general interests of the individuals who compose them, and by the popular opinions of more enlightened times. Already, during the very short interval which has elapsed since the publication of Mr. Hume's writings, an astonishing change has taken place in Europe. The mysteries of courts have been laid open; the influence of secret negotiation on the relative situation of states has declined; and the studies of those men whose public spirit or ambition devotes them to the service of their country, have been diverted from the intrigues of cabinets, and the details of the diplomatic code, to the liberal and manly pursuits of political philosophy.

CHAPTER FIFTH.

OF THE ASSOCIATION OF IDEAS.

THE subject on which I am now to enter, naturally divides itself into two Parts. The first relates to the influence of Association, in regulating the succession of our thoughts; the second, of its influence on the intellectual powers, and on the moral character, by the more intimate and indissoluble combinations which it leads us to form in infancy and in early youth. The two inquiries, indeed, run into each other; but it will contribute much to the order of our speculations, to keep the foregoing arrangement in view.

PART FIRST.

OF THE INFLUENCE OF ASSOCIATION IN REGULATING THE SUCCESSION OF OUR THOUGHTS.

SECTION I.

General Observations on this Part of our Constitution, and on the Language of Philosophers with respect to it.

THAT one thought is often suggested to the mind by another, and that the sight of an external object often recalls former occurrences, and revives former feelings, are facts which are perfectly familiar, even to those who are the least disposed to speculate concerning the principles of their nature. In passing along a road which we have formerly travelled in the company of a friend, the particulars of the conversation in which we were then engaged, are frequently suggested to us by the objects we meet with. In such a scene, we recollect that a particular subject was started; and, in passing the different houses, and plantations, and rivers, the arguments we were discussing when we last saw them, recur spontaneously to the memory. The connexion which is formed in the mind between the words of a language and the ideas they denote; the connexion which is formed between the different words of a discourse we have committed to memory; the connexion between the different notes of a piece of music in the mind of the musician, are all obvious instances of the same general law of our nature.

The influence of perceptible objects in reviving former thoughts, and former feelings, is more particularly remarkable. After time has, in some degree, reconciled us to the death of a friend, how wonderfully are we affected the first time we enter the house where he lived! Every thing we see, the apartment where he studied, the chair upon which he sat, recall to us the happiness we have enjoyed together; and we should feel it a sort of violation of that respect we owe to his memory, to engage in any light or indifferent discourse when such objects are before us. In the case, too, of those remarkable scenes which interest the curiosity, from the memorable persons or transactions which we have been accustomed to connect with them in the course of our studies, the fancy is more awakened by the actual perception of the scene itself, than by the mere conception or imagination of it. Hence the pleasure we enjoy in visiting classical ground, in beholding the retreats which inspired the genius of our favorite authors, or the fields which have been dignified by exertions of heroic virtue. How feeble are the emotions produced by the liveliest conception of modern Italy, to what the poet felt, when, amidst the ruins of Rome,

"He drew the inspiring breath of ancient arts,
———And trod the sacred walks
Where, at each step, imagination burns!"[*]

The well-known effect of a particular tune on Swiss regiments when at a distance from home, furnishes a very striking illustration of the peculiar power of a perception, or of an impression on the senses, to awaken associated thoughts and feelings; and numberless facts of a similar nature must have occurred to every person of moderate sensibility, in the course of his own experience.

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[*] "Quacunque ingredimur," says Cicero, speaking of Athens, "in aliquam historiam vestigium ponimus."

"Whilst we were at dinner," says Captain King, "in this miserable hut, on the banks of the river Awatska; the guests of a people with whose existence we had before been scarce acquainted, and at the extremity of the habitable globe; a solitary, half-worn pewter spoon, whose shape was familiar to us, attracted our attention, and, on examination, we found it stamped on the back with the word *London*. I cannot pass over this circumstance in silence, out of gratitude for the many pleasant thoughts, the anxious hopes, and tender remembrances, it excited in us. Those who have experienced the effects that long absence, and extreme distance from their native country, produce on the mind, will readily conceive the pleasure such a trifling incident can give."

The difference between the effect of a perception and an idea, in awaking associated thoughts and feelings, is finely described in the introduction to the fifth book *De Finibus*.

"We agreed," says Cicero, "that we should take our afternoon's walk in the academy, as at that time of the day it was a place where there was no resort of company. Accordingly, at the hour appointed, we went to Piso's. We passed the time in conversing on different matters during our short walk from the double gate, till we came to the academy, that justly celebrated spot; which, as we wished, we found a perfect solitude. 'I know not,' said Piso, 'whether it be a natural feeling, or an illusion of the imagination founded on habit, that we are more powerfully affected by the sight of those places which have been much frequented by illustrious men, than when we either listen to the recital, or read the detail, of their great actions. At this moment, I feel strongly that emotion which I speak of. I see before me the perfect form of Plato, who was wont to dispute in this very place: these gardens not only recall him to my memory, but present his very person to my senses. I fancy to myself, that here stood Speusippus; there Xenocrates; and here, on this bench, sat his disciple Polemo. To me, our ancient senate-house seems peopled with the like visionary forms; for, often, when I enter it, the shades of Scipio, of Cato, and of Lælius, and, in particular, of my venerable grandfather, rise to my imagination. In short, such is the effect of local situation in recalling associated ideas to the mind, that it is not without reason, some philosophers have founded on this principle a species of artificial memory.' "

This influence of perceptible objects, in awakening associated thoughts and associated feelings, seems to arise, in a great measure, from their permanent operation as exciting or suggesting causes. When a train of thought takes its rise from an idea or conception, the first idea soon disappears, and a series of others succeeds, which are gradually less and less related to that with which the train commenced; but, in the case of perception, the exciting cause remains steadily before us, and all the thoughts and feelings which have any relation to it, crowd into the mind in rapid succession, strengthening each other's effects, and all conspiring in the same general impression.

I have already observed, that the connexions, which exist among our thoughts, have been long familiarly known to the vulgar, as well as to philosophers. It is, indeed, only of late, that we have been possessed of an appropriated phrase to express them; but that the general fact is not a recent discovery, may be inferred from many of the common maxims of prudence and of propriety, which have plainly been suggested by an attention to this part of our constitution. When we lay it down, for example, as a general rule, to avoid in conversation all expressions, and all topics of discourse, which have any relation, however remote, to ideas of an unpleasant nature, we plainly proceed on the supposition that there are certain connexions among our thoughts, which have an influence over the order of their succession. It is unnecessary to remark, how much of the comfort and good humor of social life depends on an attention to this consideration. Such attentions are more particularly essential in our intercourse with men of the world; for the commerce of society has a wonderful effect in increasing the quickness and the *facility*, with which we associate all ideas which have any reference to life and manners;* and, of consequence, it must render the sensibility alive to many circumstances which, from the remoteness of their relation to the situation and history of the parties, would otherwise have passed unnoticed.

When an idea, however, is thus suggested by association, it produces a slighter impression, or, at least, it produces its impression more gradually, than if it were presented more directly and immediately to the mind. And hence, when we are under a necessity of communicating any disagreeable information to another, delicacy leads us, instead of mentioning the thing itself, to mention something else from which our meaning may be understood. In this manner, we prepare our hearers for the unwelcome intelligence.

The distinction between gross and delicate flattery, is founded upon the same principle. As nothing is more offensive than flattery which is direct and pointed, praise is considered as happy and elegant, in proportion to the slightness of the associations by which it is conveyed.

To this tendency which one thought has to introduce another, philosophers have given the name of the *Association of ideas;* and, as I would not wish, excepting in a case of necessity, to depart from common language, or to expose myself to the charge of delivering old doctrines in a new form, I shall continue to make use of the same expression. I am sensible, indeed, that the expression is by no means unexceptionable; and that, if it be used (as it frequently has been) to comprehend those laws by which the succession of all our thoughts and of all our mental operations is regulated, the word

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* The superiority which the man of the world possesses over the recluse student in his knowledge of mankind, is partly the result of this quickness and facility of association. Those trifling circumstances in conversation and behaviour, which, to the latter, convey only their most obvious and avowed meaning, lay open to the former many of the trains of thought which are connected with them, and frequently give him a distinct view of a character, on that very side where it is supposed to be most concealed from his observation.

idea must be understood in a sense much more extensive than it is commonly employed in. It is very justly remarked by Dr. Reid, that "memory, judgment, reasoning, passions, affections, and purposes; in a word, every operation of the mind, excepting those of sense, is excited occasionally in the train of our thoughts: so that, if we make the train of our thoughts to be only a train of ideas, the word *idea* must be understood to denote all these operations." In continuing, therefore, to employ, upon this subject, that language which has been consecrated by the practice of our best philosophical writers in England, I would not be understood to dispute the advantages which might be derived from the introduction of a new phrase, more precise and more applicable to the fact.

The ingenious author whom I last quoted, seems to think that the *association of ideas* has no claim to be considered as an original principle, or as an ultimate fact in our nature. "I believe," says he, "that the original principles of the mind, of which we can give no account, but that such is our constitution, are more in number than is commonly thought. But we ought not to multiply them without necessity. That trains of thinking, which, by frequent repetition, have become familiar, should spontaneously offer themselves to our fancy, seems to require no other original quality but the power of habit."

With this observation I cannot agree; because I think it more philosophical to resolve the power of habit into the association of ideas, than to resolve the association of ideas into habit.

The word *habit*, in the sense in which it is commonly employed, expresses that facility which the mind acquires, in all its exertions, both animal and intellectual, in consequence of practice. We apply it to the dexterity of the workman; to the extemporary fluency of the orator; to the rapidity of the arithmetical accountant. That this facility is the effect of practice, we know from experience to be a fact; but it does not seem to be an ultimate fact, nor incapable of analysis.

In the Essay on Attention, I showed that the effects of practice are produced partly on the body, and partly on the mind. The muscles, which we employ in mechanical operations, become stronger, and become more obedient to the will. This is a fact, of which it is probable that philosophy will never be able to give any explanation.

But even in mechanical operations, the effects of practice are produced partly on the mind; and, as far as this is the case, they are resolvable into what philosophers call the *association of ideas;* or into that general fact, which Dr. Reid himself has stated, "that trains of thinking, which by frequent repetition, have become familiar, spontaneously offer themselves to the mind." In the case of habits which are purely intellectual, the effects of practice resolve themselves completely into this principle: and it appears to me more precise and more satisfactory, to state the principle itself as a law of our constitution, than to slur it over under the concise appellation of *habit*, which we apply in common to mind and to body.

The tendency in the human mind to associate or connect its thoughts together, is sometimes called (but very improperly) the *imagination*. Between these two parts of our constitution, there is indeed a very intimate relation; and it is probably owing to this relation, that they have been so generally confounded under the same name. When the mind is occupied about absent objects of sense, (which, I believe, it is habitually in the great majority of mankind,) its train of thought is merely a series of conceptions; or, in common language, of imaginations.* In the case, too, of poetical imagination, it is the association of ideas that supplies the materials out of which its combinations are formed; and when such an imaginary combination is become familiar to the mind, it is the association of ideas that connects its different parts together, and unites them into one whole. The association of ideas, therefore, although perfectly distinct from the power of imagination, is immediately and essentially subservient to all its exertions.

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* Accordingly, Hobbs calls the train of thought in the mind, "Consequentia sive series imaginationum." "Per seriem imaginationum intelligo successionem unius cogitationis ad aliam."—*Leviathan*, cap. iii.

The last observation seems to me to point out, also, the circumstance which has led the greater part of English writers, to use the words *imagination* and *fancy* as synonymous. It is obvious that a creative imagination, when a person possesses it so habitually that it may be regarded as forming one of the characteristics of his genius, implies a power of summoning up, at pleasure, a particular class of ideas, and of ideas related to each other in a particular manner; which power can be the result only of certain habits of association, which the individual has acquired. It is to this power of the mind, which is evidently a particular turn of thought, and not one of the common principles of our nature, that our best writers (so far as I am able to judge) refer, in general, when they make use of the word *fancy:* I say, in general; for in disquisitions of this sort, in which the best writers are seldom precise and steady in the employment of words, it is only to their prevailing practice that we can appeal as an authority. What the particular relations are, by which those ideas are connected that are subservient to poetical imagination, I shall not inquire at present. I think they are chiefly those of resemblance and analogy. But whatever they may be, the power of summoning up at pleasure the ideas so related, as it is the ground-work of poetical genius, is of sufficient importance in the human constitution to deserve an appropriated name; and, for this purpose, the word *fancy* would appear to be the most convenient that our language affords.

Dr. Reid has somewhere observed, that, " the part of our constitution on which the association of ideas depends, was called, by the older English writers, the *fantasy* or *fancy;*" an use of the word, we may remark, which coincides, in many instances, with that which I propose to make of it. It differs from it only in this, that these writers applied it to the association of ideas in general, whereas I restrict its application to that habit of association, which is subservient to poetical imagination.

According to the explanation, which has now been given to the word *fancy*, the office of this power is to collect materials for the *Imagination*; and therefore the latter power presupposes the former, while the former does not necessarily suppose the latter. A man whose habits of association present to him, for illustrating or embellishing a subject, a number of resembling or of analogous ideas, we call a man of fancy; but for an effort of imagination, various other powers are necessary, particularly the powers of taste and of judgment; without which, we can hope to produce nothing that will be a source of pleasure to others. It is the power of fancy which supplies the poet with metaphorical language, and with all the analogies which are the foundation of his allusions; but it is the power of imagination that creates the complex scenes he describes, and the fictitious characters he delineates. To fancy, we apply the epithets of rich or luxuriant; to imagination, those of beautiful or sublime.

SECTION II.

Of the Principles of Association among our Ideas.

The facts which I stated in the former section, to illustrate the tendency of a perception, or of an idea, to suggest ideas related to it, are so obvious as to be matter of common remark. But the relations which connect all our thoughts together, and the laws which regulate their succession, were but little attended to before the publication of Mr. Hume's writings.

It is well known to those who are in the least conversant with the present state of metaphysical science, that this eminent writer has attempted to reduce all the principles of association among our ideas to three: Resemblance, Contiguity in time and place, and Cause and Effect. The attempt was great, and worthy of his genius; but it has been shown by several writers since his time,[*] that his enumeration is not only incomplete, but that it is even indistinct, so far it goes.

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[*] See in particular, Lord Kaimes's *Elements of Criticism*, and Dr. Gerard's *Essay on Genius*. See also Dr. Campbell's *Philosophy of Rhetoric*, vol. i. p. 197.

It is not necessary for my present purpose, that I should enter into a critical examination of this part of Mr. Hume's system: or that I should attempt to specify those principles of association which he has omitted. Indeed, it does not seem to me, that the problem admits of a satisfactory solution; for there is no possible relation among the objects of knowledge, which may not serve to connect them together in the mind; and, therefore, although one enumeration may be more comprehensive than another, a perfectly complete enumeration is scarcely to be expected.

Nor is it merely in consequence of the relations among things, that our notions of them are associated: they are frequently coupled together by means of relations among the words which denote them; such as a similarity of sound, or other circumstances still more trifling. The alliteration which is so common in poetry, and in proverbial sayings, seems to arise, partly at least, from associations of ideas founded on the accidental circumstance, of the two words which express them beginning with the same letter.

> "But thousands die, without or this or that,
> Die, and endow a College, or a Cat."
> POPE's *Ep. to Lord Bathurst.*
>
> "Ward tried, on Puppies, and the Poor, his drop."
> *Id. Imitat. of* HORACE.
>
> "Puffs, powders, patches; Bibles, billets-doux."
> *Rape of the Lock.*

This indeed pleases only on slight occasions, when it may be supposed that the mind is in some degree playful, and under the influence of those principles of associa-

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It is observed by Dr. Beattie, that something like an attempt to enumerate the laws of association is to be found in Aristotle; who, in speaking of Recollection, insinuates, with his usual brevity, that "the relations, by which we are led from one thought to another, in tracing out, or *hunting after*," as he calls it, "any particular thought which does not immediately occur, are chiefly three; Resemblance, Contrariety, and Contiguity." See *Dissertations, Moral and Critical*, p. 9. Also p. 145.

The passage to which Dr. Beattie refers, is as follows:

Ὅταν ουν ἀναμιμνησκώμεθα, κινούμεθα τῶν προτέρων τινὰ κινήσεων, ἕως ἂν κινηθῶμεν, μεθ' ἣν ἐκείνη εἴωθε. Διὸ καὶ τὸ ἐφεξῆς θηρεύομεν νοήσαντες ἀπὸ τοῦ νῦν, η ἄλλου τινὸς, καὶ ἀφ' ὁμοίου, η ἐναντίου, η τοῦ σύνεγγυς. Διὰ τοῦτο γίνεται ἡ ἀνάμνησις.

ARISTOT. *de Memor. et Reminisc.* vol. i. p. 681, Edit. DU VAL.

tion which commonly take place when we are careless and disengaged. Every person must be offended with the second line of the following couplet, which forms part of a very sublime description of the Divine Power:

> "Breathes in our soul, informs our mortal part,
> As full, as perfect, in a Hair as Heart."
>
> *Essay on Man*, Ep. 1.

To these observations, it may be added, that things which have no known relation to each other, are often associated, in consequence of their producing similar effects on the mind. Some of the finest poetical allusions are founded on this principle; and, accordingly, if the reader is not possessed of sensibility congenial to that of the poet, he will be apt to overlook their meaning, or to censure them as absurd. To such a critic it would not be easy to vindicate the beauty of the following stanza, in an Ode addressed to a lady by the author of *The Seasons:*

> "Oh thou, whose tender, serious eye
> Expressive speaks the soul I love;
> The gentle azure of the sky,
> The pensive shadows of the grove."

I have already said, that the view of the subject which I propose to take, does not require a complete enumeration of our principles of association. There is, however, an important distinction among them, to which I shall have occasion frequently to refer, and which, as far as I know, has not hitherto attracted the notice of philosophers. The relations upon which some of them are founded, are perfectly obvious to the mind; those which are the foundation of others, are discovered only in consequence of particular efforts of attention. Of the former kind, are the relations of Resemblance and Analogy, of Contrariety, of Vicinity in time and place, and those which arise from accidental coincidences in the sound of different words. These, in general, connect our thoughts together, when they are suffered to take their natural course, and when we are conscious of little or no active exertion. Of the latter kind, are the relations of Cause and Effect, of Means and End, of

Premises and Conclusion; and those others, which regulate the train of thought in the mind of the Philosopher, when he is engaged in a particular investigation.

It is owing to this distinction, that transitions, which would be highly offensive in philosophical writing, are the most pleasing of any in poetry. In the former species of composition, we expect to see an author lay down a distinct plan or method, and observe it rigorously; without allowing himself to ramble into digressions, suggested by the accidental ideas or expressions which may occur to him in his progress. In that state of mind in which poetry is read, such digressions are not only agreeable, but necessary to the effect; and an arrangement founded on the spontaneous and seemingly casual order of our thoughts, pleases more than one suggested by an accurate analysis of the subject.

How absurd would the long digression in praise of Industry, in Thomson's Autumn, appear, if it occurred in a prose essay!—a digression, however, which, in that beautiful poem, arises naturally and insensibly from the view of a luxuriant harvest; and which as naturally leads the Poet back to the point where his excursion began:

> "All is the gift of Industry; whate'er
> Exalts, embellishes, and renders life
> Delightful. Pensive Winter, cheer'd by him,
> Sits at the social fire, and happy hears
> Th' excluded tempest idly rave along;
> His harden'd fingers deck the gaudy Spring;
> Without him Summer were an arid waste;
> Nor to th' Autumnal months could thus transmit
> Those full, mature, immeasurable stores,
> That waving round, recall my wandering song."

In Goldsmith's *Traveller*, the transitions are managed with consummate skill; and yet, how different from that logical method which would be suited to a philosophical discourse on the state of society in the different parts of Europe! Some of the finest are suggested by the associating principle of Contrast. Thus, after describing the effeminate and debased Romans, the Poet proceeds to the Swiss:

> "My soul, turn from them,—turn we to survey
> Where rougher climes a nobler race display."

And after painting some defects in the manners of this gallant but unrefined people, his thoughts are led to those of the French:

> "To kinder skies, where gentler manners reign,
> I turn,—and France displays her bright domain."

The transition which occurs in the following lines, seems to be suggested by the accidental mention of a word; and is certainly one of the happiest in our language.

> "Heavens! how unlike their Belgic sires of old!
> Rough, poor, content, ungovernably bold;
> War in each breast, and freedom on each brow;
> How much unlike the sons of Britain now!—
> —Fired at the sound, my genius spreads her wing,
> And flies, where Britain courts the western spring."

Numberless illustrations of the same remark might be collected from the ancient Poets, more particularly from the Georgics of Virgil, where the singular felicity of the transitions has attracted the notice even of those, who have been the least disposed to indulge themselves in philosophical refinements concerning the principles of Criticism. A celebrated instance of this kind occurs in the end of the first Book;—the consideration of the weather and of its common prognostics leading the fancy, in the first place, to those more extraordinary phenomena, which, according to the superstitious belief of the vulgar, are the forerunners of political revolutions; and, afterwards, to the death of Cæsar, and the battles of Pharsalia and Philippi. The manner in which the Poet returns to his original subject, displays that exquisite art which is to be derived only from the diligent and enlightened study of nature.

> "Scilicet et tempus veniet, cùm finibus illis
> Agricola, incurvo terram molitus aratro,
> Exesa inveniet scabrâ rubigine pila;
> Aut gravibus rastris galeas pulsabit inanes,
> Grandiaque effossis mirabitur ossa sepulchris."

The facility with which ideas are associated in the mind, is very different in different individuals: a circumstance which, as I shall afterwards show, lays the foundation of remarkable varieties among men, both in respect of genius and of character. I am inclined, too, to think that, in the other sex (probably in consequence of early education) ideas are more easily associated together, than in the minds of men. Hence the liveliness of their fancy, and the superiority they possess in epistolary writing, and in those kinds of poetry, in which the principal recommendations are ease of thought and expression. Hence, too, the facility with which they contract or lose habits, and accommodate their minds to new situations; and, I may add, the disposition they have to that species of superstition which is founded on accidental combinations of circumstances. The influence which this facility of association has on the power of Taste, shall be afterwards considered.

SECTION III.

Of the Power which the Mind has over the Train of its Thoughts.

By means of the Association of Ideas, a constant current of thoughts, if I may use the expression, is made to pass through the mind while we are awake. Sometimes the current is interrupted, and the thoughts diverted into a new channel, in consequence of the ideas suggested by other men, or of the objects of perception with which we are surrounded. So completely, however, is the mind in this particular subjected to physical laws, that it has been justly observed,* we cannot by an effort of our will, call up any one thought; and that the the train of our ideas depends on causes which operate in a manner inexplicable by us.

This observation, although it has been censured as paradoxical, is almost self-evident; for, to call up a particular thought, supposes it to be already in the mind. As I shall have frequent occasion, however, to refer to the observation afterwards, I shall endeavour to obviate the only objection which, I think, can reasonably be urged against it; and which is founded on that operation of the mind, which is commonly called recollection or intentional memory.

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* By Lord KAIMES, and others.

It is evident, that before we attempt to recollect the particular circumstances of any event, that event in general must have been an object of our attention. We remember the outlines of the story, but cannot at first give a complete account of it. If we wish to recall these circumstances, there are only two ways in which we can proceed. We must either form different suppositions, and then consider which of these tallies best with the other circumstances of the event; or, by revolving in our mind the circumstances we remember, we must endeavour to excite the recollection of the other circumstances associated with them. The first of these processes is, properly speaking, an inference of reason, and plainly furnishes no exception to the doctrine already delivered. We have an instance of the other mode of recollection, when we are at a loss for the beginning of a sentence in reciting a composition that we do not perfectly remember; in which case we naturally repeat over, two or three times, the concluding words of the preceding sentence, in order to call up the other words which used to be connected with them in the memory. In this instance, it is evident, that the circumstances we desire to remember, are not recalled to the mind in immediate consequence of an exertion of volition, but are suggested by some other circumstances with which they are connected, independently of our *will, by* the laws of our constitution.

Notwithstanding, however, the immediate dependence of the train of our thoughts on the laws of association, it must not be imagined that the will possesses no influence over it. This influence, indeed, is not exercised directly and immediately, as we are apt to suppose, on a superficial view of the subject: but it is, nevertheless, very extensive in its effects; and the different degrees in which it is possessed by different individuals, constitute some of the most striking inequalities among men, in point of intellectual capacity.

Of the powers which the mind possesses over the train of its thoughts, the most obvious is its power of singling out any one of them at pleasure; of detaining it; and of making it a particular object of attention. By doing so, we not only stop the succession that would otherwise take place, but, in consequence of our bringing to view the less obvious relations among our ideas, we frequently divert the current of our thoughts into a new channel. If, for example, when I am indolent and inactive, the name of Sir Isaac Newton accidentally occur to me, it will perhaps suggest, one after another, the names of some other eminent mathematicians and astronomers, or of some of his illustrious contemporaries and friends: and a number of them may pass in review before me, without engaging my curiosity in any considerable degree. In a different state of mind, the name of Newton will lead my thoughts to the principal incidents of his life, and the more striking features of his character: or, if my mind be ardent and vigorous, will lead my attention to the sublime discoveries he made, and gradually engage me in some philosophical investigation. To every object, there are others which bear obvious and striking relations; and others, also, whose relation to it does not readily occur to us, unless we dwell upon it for some time, and place it before us in different points of view.

But the principal power we possess over the train of our ideas, is founded on the influence which our habits of thinking have on the laws of Association; an influence which is so great, that we may often form a pretty shrewd judgment concerning a man's prevailing turn of thought, from the transitions he makes in conversation or in writing. It is well known, too, that by means of habit, a particular associating principle may be strengthened to such a degree, as to give us a command of all the different ideas in our mind, which have a certain relation to each other; so that when any one of the class occurs to us, we have almost a certainty that it will suggest the rest. What confidence in his own powers must a speaker possess, when he rises without premeditation, in a popular assembly, to amuse his audience with a lively or an humorous speech! Such a confidence, it is evident, can only arise from a long experience of the strength of particular associating principles.

To how great a degree this part of our constitution may be influenced by habit, appears from facts which are familiar to every one. A man who has an ambition to become a punster, seldom or never fails in the attainment of his object; that is, he seldom or never fails in *acquiring* a power which other men have not, of summoning up, on a particular occasion, a number of words different from each other in meaning, and resembling each other, more or less, in sound. I am inclined to think that even genuine wit is a habit acquired in a similar way; and that, although some individuals may, from natural constitution, be more fitted than others to acquire this habit, it is founded in every case on a peculiarly strong association among certain classes of our ideas, which gives the person who possesses it, a command over those ideas which is denied to ordinary men. But there is no instance in which the effect of habits of association is more remarkable, than in those men who possess a facility of rhyming. That a man should be able to express his thoughts perspicuously and elegantly under the restraints which rhyme imposes, would appear to be incredible, if we did not know it to be fact. Such a power implies a wonderful command both of ideas and of expressions, and yet daily experience shows that it may be gained with very little practice. Pope tells us with respect to himself, that he could express himself not only more concisely, but more easily, in rhyme than in prose.*

Nor is it only in these trifling accomplishments that we may trace the influence of habits of association. In every instance of invention, either in the fine arts, in the mechanical arts, or in the sciences, there is some new idea, or some new combination of ideas, brought to light by the inventor. This, undoubtedly, may often happen in a way which he is unable to explain; that is, his invention may be suggested to him by some lucky thought, the origin of which he is unable to trace. But when a man possesses a habitual fertility of invention in any particular art or science, and can rely with confidence on his inventive powers, whenever he is called upon to exert them, he must have acquired, by previous habits of study, a command over certain classes of his ideas, which enables him, at pleasure, to bring them under his review. The illustration of these subjects may throw light on some processes of the mind which are not in general well understood: and I shall, accordingly, in the following section, offer a few hints with respect to those habits of association which are the foundation of wit; of the power of rhyming; of poetical fancy; and of invention in matters of science.

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* "When habit is once gained, nothing so easy as practice. Cicero writes, that Antipater the Sidonian could pour forth hexameters extempore; and that, whenever he chose to versify, words followed him of course. We may add to Antipater, the ancient rhapsodists of the Greeks, and the modern improvisatori of the Italians." HARRIS's *Phil. Inq.* 108, 110.

SECTION IV.

Illustrations of the Doctrine stated in the preceding Section.

I.—OF WIT.

ACCORDING to Locke, Wit consists "in the assemblage of ideas; and putting those together with quickness and variety, wherein can be found any resemblance or congruity."* I would add to this definition, (rather by way of comment than of amendment,) that wit implies a power of calling up at pleasure the ideas which it combines: and I am inclined to believe, that the entertainment which it gives to the hearer, is founded, in a considerable degree, on his surprise at the command which the man of wit has acquired over a part of the constitution, which is so little subject to the will.

That the effect of wit depends partly, at least, on the circumstance now mentioned, appears evidently from this, that we are more pleased with a *bon mot*, which occurs in conversation, than with one in print; and that we never fail to receive disgust from wit, when we suspect it to be premediated. The pleasure, too, we receive from wit, is heightened, when the original idea is started by one person, and the related idea by another. Dr. Campbell has remarked, that "a witty repartee is infinitely more pleasing than a witty attack; and that an allusion will appear excellent when thrown out extempore in conversation, which would be deemed execrable in print." In all these cases, the wit considered absolutely is the same. The relations which are discovered between the compared ideas are equally new: and yet, as soon as we suspect that the wit was premeditated, the pleasure we receive from it is infinitely diminished. Instances indeed may be mentioned, in which we are pleased with contemplating an unexpected relation between ideas, without any reference to the habits of association in the mind of the person who discovered it. A *bon mot* produced at the game of cross-purposes would not fail to create amusement; but in such cases, our pleasure seems chiefly to arise from the surprise we feel at so extraordinary a coincidence between a question and an answer coming from persons who had no direct communication with each other.

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* Essay on Human Understanding, book ii. chap. 11.

Of the effect added to wit by the promptitude with which its combinations are formed, Fuller appears to have had a very just idea, from what he has recorded of the social hours of our two great English Dramatists. "Johnson's parts were not so ready to run of themselves, as able to answer the spur; so that it may be truly said of him, that he had an *elaborate wit*, wrought out by his own industry.—Many were the wit-combats between him and Shakspeare, which two I behold like a Spanish great galleon, and an English man of war. Johnson (like the former) was built far higher in learning; solid, but slow in his performances. Shakspeare, with the English man of war, lesser in bulk, but lighter in sailing, could turn with all tides, tack about and take advantage of all winds, by the quickness of his wit and invention."*

I before observed, that the pleasure we receive from wit is increased, when the two ideas between which the relation is discovered, are suggested by different persons. In the case of a *bon mot* occurring in conversation, the reason of this is abundantly obvious; because, when the related ideas are suggested by different persons, we have a proof that the wit was not premeditated. But even in a written composition, we are much more delighted when the subject was furnished to the author by another person, than when he chooses the topic on which he is to display his wit. How much would the pleasure we receive from the *Key to the Lock* be diminished, if we suspected that the author had the key in view when he wrote that poem; and that he introduced some expressions, in order to furnish a subject for the wit of the commentator? How totally would it destroy the pleasure we receive from a parody on a poem, if we suspected that both were productions of the same author? The truth seems to be, that when both the related ideas are suggested by the same person, we have not a very satisfactory proof of any thing uncommon in the intellectual habits of the author. We may suspect that both ideas occurred to him at the same time; and we know that in the dullest and most phlegmatic minds, such extraordinary associations will sometimes take place. But when the subject of the wit is furnished by one person, and the wit suggested by another, we have a proof, not only that the author's mind abounds with such singular associations, but that he has a wit perfectly at command.

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* History of the Worthies of England. London, 1662.

As an additional confirmation of these observations, we may remark, that the more an author is limited by his subject, the more we are pleased with his wit. And, therefore, the effect of wit does not arise solely from the unexpected relations which it presents to the mind, but arises, in part, from the surprise it excites at those intellectual habits which give it birth. It is evident, that the more the author is circumscribed in the choice of his materials, the greater must be the command which he has acquired over those associating principles on which wit depends, and of consequence, according to the foregoing doctrine, the greater must be the surprise and the pleasure which his wit produces. In Addison's celebrated verses to Sir Godfrey Kneller on his picture of

George the first, in which he compares the painter to Phidias, and the subjects of his pencil to the Grecian Deities, the range of the Poet's wit was necessarily confined within very narrow bounds; and what principally delights us in that performance is, the surprising ease and felicity with which he runs the parallel between the English history and the Greek mythology. Of all the allusions which the following passage contains, there is not one, taken singly, of very extraordinary merit; and yet the effect of the whole is uncommonly great, from the singular power of combination, which so long and so difficult an exertion discovers.

> "Wise Phidias thus, his skill to prove,
> Through many a god advanc'd to Jove,
> And taught the polished rocks to shine
> With airs and lineaments divine,
> Till Greece amaz'd and half afraid,
> Th' assembled deities survey'd.
> "Great Pan, who wont to chase the fair,
> And lov'd the spreading oak, was there;
> Old Saturn, too, with up-cast eyes,
> Beheld his abdicated skies;
> And mighty Mars, for war renown'd,
> In adamantine armour frown'd;
> By him the childless Goddess rose,
> Minerva, studious to compose
> Her twisted threads; the web she strung,
> And over a loom of marble hung;
> Thetis, the troubled ocean's queen,
> Match'd with a mortal next was seen,
> Reclining on a funeral urn,
> Her short-lived darling son to mourn;
> The last was he, whose thunder slew
> The Titan race, a rebel crew,
> That from a hundred hills ally'd,
> In impious league their king defy'd."

According to the view which I have given of the nature of Wit, the pleasure we derive from that assemblage of ideas which it presents, is greatly heightened and enlivened by our surprise at the command displayed over a part of the constitution, which, in our own case, we find to be so little subject to the will. We consider Wit as a sort of feat or trick of intellectual dexterity, analogous, in some respects, to the extraordinary performances of jugglers and rope-dancers; and in both cases, the pleasure we receive from the exhibition, is explicable *in part*, (I, by no means, say *entirely*,) on the same principles.

If these remarks be just, it seems to follow as a consequence, that those men who are most deficient in the power of prompt combination, will be most poignantly affected by it, when exerted at the will of another: and therefore, the charge of jealousy and envy brought against rival Wits, when disposed to look grave at each other's jests, may perhaps be obviated in a way less injurious to their character.

The same remarks suggest a limitation, or rather an explanation, of an assertion of Lord Chesterfield's, that "genuine wit never made any man laugh since the creation of the world." The observation, I believe, to be just, if by genuine wit, we mean wit, wholly divested of every mixture of humor: and if by laughter we mean, that convulsive and noisy agitation which is excited by the ludicrous.—But there is unquestionably a *smile* appropriated to the flashes of wit;—a smile of surprise and wonder;—not altogether unlike the effect produced on the mind and the countenance, by a feat of legerdemain when executed with uncommon success.

II.—Of Rhyme.

The pleasure we receive from rhyme, seems also to arise, partly, from our surprise at the command which the Poet must have acquired over the train of his ideas, in order to be able to express himself with elegance and the appearance of ease, under the restraint which rhyme imposes. In witty or in humorous performances, this surprise serves to enliven that which the wit or the humor produces, and renders its effects more sensible. How flat do the liveliest and most ludicrous thoughts appear in blank verse! And how wonderfully is the wit of Pope heightened, by the easy and happy rhymes in which it is expressed!

It must not, however, be imagined, either in the case of wit or of rhyme, that the pleasure arises solely from our surprise at the uncommon habits of association which the author discovers. In the former case, there must be presented to the mind, an unexpected analogy or relation between different ideas: and perhaps other circumstances must concur to render the wit perfect. If the combination has no other merit than that of bringing together two ideas which never met before, we may be *surprised* at its oddity, but we do not consider it as a proof of wit. On the contrary, the want of any analogy or relation between the combined ideas, leads us to suspect, that the one did not suggest the other, in consequence of any habits of association; but that the two were brought together by study, or by mere accident. All that I affirm is, that when the analogy or relation is pleasing in itself, our pleasure is heightened by our surprise at the author's habits of association when compared with our own. In the case of rhyme, too, there is undoubtedly a certain degree of pleasure arising from the recurrence of the same sound. We frequently observe children amuse themselves with repeating over single words which rhyme together: and the lower people, who derive little pleasure from poetry, excepting in so far as it affects the ear, are so pleased with the echo of the rhymes, that when they read verses where it is not perfect, they are apt to supply the Poet's defects, by violating the common rules of pronunciation. This pleasure, however, is heightened by our admiration at the miraculous powers which the poet must have acquired over the train of his ideas, and over all the various modes of expression which the language affords, in order to convey instruction and entertainment, without transgressing the established laws of regular versification. In some of the lower kinds of poetry; for example, in acrostics, and in the lines which are adapted to *bouts-rimes*, the merit lies entirely in this command of thought and expression; or, in other words, in a command of ideas founded on extraordinary habits of association. Even some authors of a superior class occasionally show an inclination to display their knack at rhyming, by introducing, at the end of the first line of a couplet, some word to which the language hardly affords a corresponding sound. Swift, in his more trifling pieces, abounds with instances of this; and in Hudibras, when the author uses his double and triple rhymes, many couplets have no merit whatever but what arises from difficulty of execution.

The pleasure we receive from rhyme in serious compositions, arises from a combination of different circumstances which my present subject does not lead me to investigate particularly.* I am persuaded, however, that it arises, in part, from our surprise at the Poet's habits of association, which enable him to convey his thoughts with ease and beauty, notwithstanding the narrow limits within which his choice of expression is confined. One proof of this is, that if there appear any mark of constraint, either in the ideas or in the expression, our pleasure is proportionally diminished. The thoughts must seem to suggest each other, and the rhymes to be only an accidental circumstance. The same remark may be made on the measure of the verse. When in its greatest perfection, it does not appear to be the result of labor, but to be dictated by nature, or prompted by inspiration. In Pope's best verses, the idea is expressed with as little inversion of style, and with as much conciseness, precision, and propriety, as the author could have attained, had he been writing prose: without any apparent exertion on his part, the words seem spontaneously to arrange themselves in the most musical numbers,

"While still a child, nor yet a fool to fame,
I lisp'd in numbers, for the numbers came."

This facility of versification, it is true, may be, and probably is, in most cases, only apparent: and it is reasonable to think, that in the most perfect poetical productions, not only the choice of words but the choice of ideas, is influenced by the rhymes.—In a prose composition, the author holds on in a direct course according to the plan he has previously formed; but in a poem, the rhymes which occur to him are perpetually diverting him to the right hand or to the left, by suggesting ideas which do not naturally rise out of his subject. This, I presume, is Butler's meaning in the following couplet:

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* In Elegiac poetry, the recurrence of the same sound, and the uniformity in the structure of the versification which this necessarily occasions, are peculiarly suited to the inactivity of the mind, and to the slow and equable succession of its ideas, when under the influence of tender or melancholy passions; and, accordingly, in such cases, even the Latin poets, though the genius of their language be very ill fitted for compositions in rhyme, occasionally indulge themselves in something very nearly approaching to it:

"Memnona si mater, mater ploravit Achillem,
Et tangant magnas tristia fata Deas;
Flebilis indignos Elegeia solve capillos,
Ah nimis ex vero nunc tibi nomen erit."

Many other instances of the same kind might be produced from the Elegiac verses of Ovid and Tibullus.

> "Rhymes the rudder are of verses,
> With which, like ships, they steer their courses."

But although this may be the case in fact, the poet must employ all his art to conceal it: insomuch that if he finds himself under a necessity to introduce, on account of the rhymes, a superfluous idea, or an awkward expression, he must place it in the first line of the couplet, and not in the second; for the reader naturally presuming that the lines were composed in the order in which the author arranges them, is more apt to suspect the second line to be accommodated to the first, than the first to the second. And this slight artifice is, in general, sufficient to impose on that degree of attention with which poetry is read. Who can doubt that, in the following lines, Pope, wrote the first for the sake of the second?

> "*A wit's a feather, and a chief a rod;*
> *An honest man 's the noblest work of God.*"

Were the first of these lines, or a line equally unmeaning, placed last, the couplet would have appeared execrable to a person of the most moderate taste.

It affords a strong confirmation of the foregoing observations, that the Poets of some nations have delighted in the practice of alliteration, as well as of rhyme, and have even considered it as an essential circumstance in versification. Dr. Beattie observes, that "some ancient English poems are more distinguished by alliteration, than by any other poetical contrivance. In the works of Langland, even when no regard is had to rhyme, and but little to a rude sort of anapæstic measure, it seems to have been a rule, that three words at least of each line should begin with the same letter." A late author informs us, that, in the Icelandic poetry, alliteration is considered as a circumstance no less essential than rhyme.* He mentions also several other restraints, which must add wonderfully to the difficulty of versification; and which appear to us to be perfectly arbitrary and capricious. If that really be the case, the whole pleasure of the reader or hearer arises from *his* surprise at the facility of the Poet's composition under these complicated restraints; that is, from his surprise at the command which the Poet has acquired over his thoughts and expressions. In our rhyme, I acknowledge, that the coincidence of sound is agreeable in itself; and only affirm, that the pleasure which the ear receives from it, is heightened by the other consideration.

III.—OF POETICAL FANCY.

THERE is another habit of association, which, in some men, is very remarkable; that which is the foundation of Poetical Fancy: a talent which agrees with Wit in some circumstances, but which differs from it essentially in others.

The pleasure we receive from Wit, agrees in one particular with the pleasure which arises from poetical allusions; that in both cases we are pleased with contemplating an analogy between two different subjects. But they differ in this, that the man of Wit has no other aim than to combine analogous ideas;† whereas no allusion can, with propriety, have a place in serious poetry, unless it either illustrate or adorn the principal subject. If it has both these recommendations, the allusion is perfect. If it has neither, as is often the case with the allusions of Cowley and of Young, the Fancy of the Poet degenerates into Wit.

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* "The Icelandic poetry requires two things; viz. words with the same initial letters, and words of the same sound. It was divided into stanzas, each of which consisted of four couplets; and each of these couplets was again composed of two hemistics, of which every one contained six syllables; and it was not allowed to augment this number, except in cases of the greatest necessity." See VAN TROIL's *Letters on Iceland*, p. 208.

† I speak here of pure and unmixed wit, and not of wit, blended, as it is most commonly, with some degree of humor.

If these observations be well-founded, they suggest a rule with respect to poetical allusions, which has not always been sufficiently attended to. It frequently happens, that two subjects bear an analogy to each other in more respects than one; and where such can be found, they undoubtedly furnish the most favorable of all occasions for the display of Wit. But, in serious poetry, I am inclined to think, that however striking these analogies may be, and although each of them might, with propriety, be made the foundation of a separate allusion, it is improper, in the course of the same allusion, to include more than one of them; as, by doing so, an author discovers an affectation of wit, or a desire of tracing analogies, instead of illustrating or adorning the subject of his composition.

I formerly defined Fancy to be a power of associating ideas according to relations of resemblance and analogy. This definition will probably be thought too general; and to approach too near to that given of Wit. In order to discover the necessary limitations, we shall consider what the circumstances are, which please us in poetical allusions. As these allusions are suggested by Fancy, and are the most striking instances in which it displays itself, the received rules of Critics with respect to them, may throw some light on the mental power which gives them birth.

1. An allusion pleases, by illustrating a subject comparatively obscure. Hence, I apprehend, it will be found, that allusions from the intellectual world to the material, are more pleasing, than from the material world to the intellectual. Mason, in his Ode to Memory, compares the influence of that faculty over our ideas, to the authority of a general over his troops:

> ——" thou, whose sway
> The throng'd ideal hosts obey;
> Who bidst their ranks now vanish, now appear,
> Flame in the van, or darken in the rear."

Would the allusion have been equally pleasing, from a general marshalling his soldiers, to Memory and the succession of ideas?

The effect of a literal and spiritless translation of a work of genius, has been compared to that of the figures which we see, when we look at the wrong side of a beautiful piece of tapestry. The allusion is ingenious and happy; but the pleasure which we receive from it arises, not merely from the analogy which it presents to us, but from the illustration which it affords of the author's idea. No one, surely, in speaking of a piece of tapestry, would think of comparing the difference between its sides, to that between an original composition and a literal translation!

Cicero, and after him Mr. Locke, in illustrating the difficulty of attending to the subjects of our consciousness, have compared the Mind to the Eye, which sees every object around it, but is invisible to itself. To have compared the Eye, in this respect, to the Mind, would have been absurd.

Mr. Pope's comparison of the progress of youthful curiosity, in the pursuits of science, to that of a traveller among the Alps, has been much, and justly, admired. How would the beauty of the allusion have been diminished, if the Alps had furnished the original subject, and not the illustration!

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V.—OF INVENTION IN THE ARTS AND SCIENCES.

To these powers of Wit and Fancy, that of Invention in the Arts and Sciences has a striking resemblance. Like them, it implies a command over certain classes of ideas, which, in ordinary men, are not equally subject to the will: and like them, too, it is the result of acquired habits, and not the original gift of nature.

Of the process of the mind in scientific invention, I propose afterwards to treat fully under the article of Reasoning; and I shall therefore confine myself at present to a few detached remarks upon some views of the subject which are suggested by the foregoing inquiries.

Before we proceed it may be proper to take notice of the distinction between Invention and Discovery. The object of the former, as has been frequently remarked, is to produce something which had no existence before; that of the latter, to bring to light something which did exist, but which was concealed from common observation. Thus we say, Otto Guerricke invented the air-pump; Sanctorius invented the thermometer; Newton and Gregory invented the reflecting telescope; Galileo discovered the solar spots; and Harvey discovered the circulation of the blood. It appears, therefere, that improvements in the Arts are properly called *inventions;* and that facts brought to light by means of observation, are properly called *discoveries.*

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In general, every advancement in knowledge is considered as a discovery; every contrivance by which we produce an effect, or accomplish an end, is considered as an *invention*. Discoveries in science, therefore, unless they are made by accident, imply the exercise of invention; and accordingly, the word invention is commonly used to express originality of genius in the Sciences, as well as in the Arts. It is in this general sense that I employ it in the following observations.

It was before remarked, that in every instance of invention, there is some new idea, or some new combination of ideas, which is brought to light by the inventor; and that, although this may sometimes happen, in a way which he is unable to explain, yet when a man possesses an habitual fertility of invention in any particular Art or Science, and can rely, with confidence, on his inventive powers, whenever he is called upon to exert them; he must have acquired, by previous habits of study, a command over those classes of his ideas, which are subservient to the particular effort that he wishes to make. In what manner this command is acquired, it is not possible, perhaps, to explain completely; but it appears to me to be chiefly in the two following ways. In the first place, by his habits of speculation, he may have arranged his knowledge in such a manner as may render it easy for him to combine, at pleasure, all the various ideas in his mind, which have any relation to the subject about which he is occupied: or, secondly, he may have learned by experience certain general rules, by means of

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I. The former of these observations I shall not stop to illustrate particularly at present, as the same subject will occur afterwards, under the article of Memory. It is sufficient for my purpose, in this chapter, to remark, that as habits of speculation have a tendency to classify our ideas, by leading us to refer particular facts and particular truths to general principles; and as it is from an approximation and comparison of related ideas, that new discoveries in most instances result; the knowledge of the philosopher, even supposing that it is not more extensive, is arranged in a manner much more favorable to invention, than in a mind unaccustomed to system.

How much invention depends on a proper combination of the materials of our knowledge, appears from the resources which occur to men of the lowest degree of ingenuity, when they are pressed by any alarming difficulty and danger, and from the unexpected exertions made by very ordinary characters, when called to situations which rouse their latent powers. In such cases, I take for granted, that necessity operates in producing invention, chiefly by concentrating the attention of the mind to one set of ideas, by leading us to view these in every light, and to combine them variously with each other. As the same idea may be connected with an infinite variety of others by different relations, it may, according to circumstances, at one time, suggest one of these ideas, and, at another time, a different one. When we dwell long on the same idea, we obtain all the others to which it is any way related, and thus are furnished with materials on which our powers of judgment and reasoning may be employed. The effect of the division of labor in multiplying mechanical contrivances, is to be explained partly on the same principle. It limits the attention to a particular subject, and familiarizes to the mind all the possible combinations of ideas which have any relation to it.

These observations suggest a remarkable difference between Invention and Wit. The former depends, in

most instances, on a combination of those ideas, which are connected by the less obvious principles of association; and it may be called forth in almost any mind by the pressure of external circumstances. The ideas which must be combined, in order to produce the latter, are chiefly such as are associated by those slighter connexions which take place, when the mind is careless and disengaged. "If you have real wit," says Lord Chesterfield, "it will flow spontaneously, and you need not aim at it; for in that case, the rule of the gospel is reversed; and it will prove, seek and you shall not find." Agreeably to this observation, wit is promoted by a certain degree of intoxication, which prevents the exercise of that attention which is necessary for invention in matters of Science. Hence too it is, that those who have the reputation of Wits, are commonly men confident in their own powers, who allow the train of their ideas to follow, in a great measure, its natural course, and hazard, in company, every thing, good or bad, that occurs to them. Men of modesty and taste seldom attempt wit in a promiscuous society, or if they are forced to make such an exertion, they are seldom successful. Such men, however, in a circle of their friends, to whom they can unbosom themselves without reserve, are frequently the most amusing and the most interesting of companions; as the vivacity of their wit is tempered by a correct judgment, and refined manners, and as its effect is heightened by that sensibility and delicacy with which we so rarely find it accompanied in the common intercourse of life.

When a man of wit makes an exertion to distinguish himself, his sallies are commonly too far fetched to please. He brings his mind into a state approaching to that of the inventor, and becomes rather ingenious than witty. This is often the case with the writers whom Johnson distinguishes by the name of the Metaphysical Poets.

Those powers of invention, which necessity occasionally calls forth in uncultivated minds, some individuals possess habitually. The related ideas which, in the case of the former, are brought together by the slow

efforts of attention and recollection, present themselves to the latter, in consequence of a more systematical arrangement of their knowledge. The instantaneousness with which such remote combinations are effected, sometimes appear so wonderful, that we are apt to ascribe it to something like inspiration ; but it must be remembered, that when any subject strongly and habitually occupies the thoughts, it gives us an interest in the observation of the most trivial circumstance which we suspect to have any relation to it, however distant; and by thus rendering the common objects and occurrences which the accidents of life present to us, subservient to one particular employment of the intellectual powers, establishes in the memory a connexion between our favorite pursuit, and all the materials with which experience and reflection have supplied us for the farther prosecution of it.

II. I observed, in the second place, that invention may be facilitated by general rules, which enable the inventor to direct the train of his thoughts into particular channels. These rules (to ascertain which ought to be one principal object of the logician) will afterwards fall under my consideration, when I come to examine those intellectual processes which are subservient to the discovery of truth. At present, I shall confine myself to a few general remarks ; in stating which I have no other aim, than to show, to how great a degree invention depends on cultivation and habit, even in those sciences in which it is generally supposed that every thing depends on natural genius.

When we consider the geometrical discoveries of the ancients, in the form in which they are exhibited in the greater part of the works which have survived to our times, it is seldom possible for us to trace the steps by which they were led to their conclusions : and, indeed, the objects of this science are so unlike those of all others, that it is not unnatural for a person when he enters on the study, to be dazzled by its novelty, and to form an exaggerated conception of the genius of those men who first brought to light such a variety of truths, so profound and so remote from the ordinary course of our

speculations. We find, however, that even at the time when the ancient analysis was unknown to the moderns, such mathematicians as had attended to the progress of the mind in the discovery of truth, concluded *a priori*, that the discoveries of the Greek geometers did not, at first, occur to them in the order in which they are stated in their writings. The prevailing opinion was, that they had possessed some secret method of investigation, which they carefully concealed from the world; and that they published the result of their labors in such a form, as they thought would be most likely to excite the admiration of their readers. "O quam bene foret," says *Petrus Nonius*, "si qui in scientiis mathematicis scripserint authores, scripta reliquissent inventa sua eâdem methodo, et per eosdem discursus, quibus ipsi in ea primum inciderunt; et non, ut in mechanicâ loquitur Aristoteles de artificibus, qui nobis foris ostendunt suas quas fecerint machinas, sed artificium abscondunt, ut magis appareant admirabiles. Est utique inventio in arte quâlibet diversa multum a traditione: neque putandum est plurimas Euclidis et Archimedis propositiones fuisse ab illis eâ viâ inventas quâ nobis illi ipsas tradiderunt."* The revival of the ancient analysis by some late mathematicians in this country, has, in part, justified these remarks, by showing to how great a degree the inventive powers of the Greek geometers were aided by that method of investigation; and by exhibiting some striking specimens of address in the practical application of it.

The solution of problems, indeed, it may be said, is but one mode in which mathematical invention may be displayed. The discovery of new truths is what we chiefly admire in an original genius; and the method of analysis gives us no satisfaction with respect to the process by which they are obtained.

To remove this difficulty completely, by explaining all the various ways in which new theorems may be brought to light, would lead to inquiries foreign to this

order, however, to render the process of the such occasions, a little less mysterious than it monly supposed to be, it may be proper to remark, he most copious source of discoveries is the investion of problems; which seldom fails, (even although we should not succeed in the attainment of the object which we have in view,) to exhibit to us some relations formerly unobserved among the quantities which are under consideration. Of so great importance is it to concentrate the attention to a particular subject, and to check that wandering and dissipated habit of thought, which, in the case of most persons, renders their speculations barren of any profit either to themselves or to others. Many theorems, too, have been suggested by analogy; many have been investigated from truths formerly known, by altering or by generalizing the hypothesis; and many have been obtained by a species of induction. An illustration of these various processes of the mind would not only lead to new and curious remarks, but would contribute to diminish that blind admiration of original genius, which is one of the chief obstacles to the improvement of science.

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* See some other passages to the same purpose, quoted from different writers, by Dr. Simpson, in the preface to his Restoration of the Loci Plani of Apollonius Pergæus, Glasg. 1749.

The history of natural philosophy, before and after the time of Lord Bacon, affords another proof, how much the powers of invention and discovery may be assisted by the study of method: and in all the sciences, without exception, whoever employs his genius with a regular and habitual success, plainly shows, that it is by means of general rules, that his inquiries are conducted. Of these rules, there may be many which the inventor never stated to himself in words; and, perhaps, he may even be unconscious of the assistance which he derives from them; but their influence on his genius appears unquestionably from the uniformity with which it proceeds; and in proportion as they can be ascertained by his own speculations, or collected by the logician from an examination of his researches, similar powers of invention will be placed within the reach of other men, who apply themselves to the same study.

The following remarks, which a truly philosophical artist has applied to painting, may be extended, with

some trifling alterations, to all the different employments of our intellectual powers.

"What we now call genius, begins, not where rules, abstractedly taken, end; but where known, vulgar, and trite rules have no longer any place.—It must of necessity be, that works of genius, as well as every other effect, as it must have its cause, must likewise have its rules; it cannot be by chance, that excellencies are produced with any constancy, or any certainty, for this is *not* the nature of chance; but the rule by which men of extraordinary parts, and such as are called men of genius, work, are either such as they discover by their own peculiar observation, or of such a nice texture as not easily to admit handling or expressing in words.

"Unsubstantial, however, as these rules may seem, and difficult as it may be to convey them in writing, they are still seen and felt in the mind of the artist; and he works from them with as much certainty, as if they were embodied, as I may say, upon paper. It is true, these refined principles cannot be always made palpable, like the more gross rules of Art; yet it does not follow, but that the mind may be put in such a train, that it shall perceive, by a kind of scientific sense, that propriety, which words can but very feebly suggest." *

SECTION V.

Application of the Principles stated in the foregoing Sections of this Chapter, to explain the Phenomena of Dreaming.

WITH respect to the Phenomena of Dreaming, three different questions may be proposed. First; what is the state of the mind in sleep? or, in other words, what faculties then continue to operate, and what faculties are then suspended? Secondly; How far do our dreams appear to be influenced by our bodily sensations; and in what respects do they vary, according to the different conditions of the body in health, and in sickness? Thirdly; What is the change which sleep produces on

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* Discourses by Sir Joshua Reynolds.

Would the allusion have been equally pleasing, from a general marshalling his soldiers, to Memory and the succession of ideas?

The effect of a literal and spiritless translation of a work of genius, has been compared to that of the figures which we see, when we look at the wrong side of a beautiful piece of tapestry. The allusion is ingenious and happy; but the pleasure which we receive from it arises, not merely from the analogy which it presents to us, but from the illustration which it affords of the author's idea. No one, surely, in speaking of a piece of tapestry, would think of comparing the difference between its sides, to that between an original composition and a literal translation!

Cicero, and after him Mr. Locke, in illustrating the difficulty of attending to the subjects of our consciousness, have compared the Mind to the Eye, which sees every object around it, but is invisible to itself. To have compared the Eye, in this respect, to the Mind, would have been absurd.

Mr. Pope's comparison of the progress of youthful curiosity, in the pursuits of science, to that of a traveller among the Alps, has been much, and justly, admired. How would the beauty of the allusion have been diminished, if the Alps had furnished the original subject, and not the illustration!

But although this rule holds in general, I acknowledge, that instances may be produced, from our most celebrated poetical performances, of allusions from material objects, both to the intellectual and the moral worlds. These, however, are comparatively few in number, and are not to be found in descriptive or in didactic works, but in compositions written under the influence of some particular passion, or which are meant to express some peculiarity in the mind of the author. Thus, a melancholy man, who has met with many misfortunes in life, will be apt to moralize on every physical event, and every appearance of nature; because his attention dwells more habitually on human life and conduct, than on the material objects around him. This is

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But this is plainly a distempered state of the mind; and the allusions please, not so much by the analogies they present, as by the picture they give of the character of the person to whom they have occurred.

2. An allusion pleases, by presenting a new and beautiful image to the mind. The analogy or the resemblance between this image and the principal subject is agreeable of itself, and is indeed necessary, to furnish an apology for the transition which the writer makes; but the pleasure is wonderfully heightened, when the new image thus presented is a beautiful one. The following allusion, in one of Mr. Home's tragedies, appears to me to unite almost every excellence:

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Here the analogy is remarkably perfect; not only between light and hope, and between darkness and fear, but between the rapid succession of light and shade, and the momentary influences of these opposite emotions: while, at the same time, the new image which is presented to us, recalls one of the most pleasing and impressive incidents in rural scenery.

The foregoing observations suggest a reason why the principal stores of Fancy are commonly supposed to be borrowed from the material world. Wit has a more extensive province, and delights to display its power of prompt and unexpected combination over all the various classes of our ideas: but the favorite excursions of Fancy are from intellectual and moral subjects to the appearances with which our senses are conversant. The truth is, that such allusions please more than any others in poetry. According to this limited idea of Fancy, it presupposes, where it is possessed in an eminent degree, an extensive observation of natural objects, and a

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mind susceptible of strong impressions from them. It is thus only that a stock of images can be acquired: and that these images will be ready to present themselves, whenever any analogous subject occurs. And hence probably it is, that poetical genius is almost always united with an exquisite sensibility to the beauties of nature.

Before leaving the subject of Fancy, it may not be improper to remark, that its two qualities are, liveliness and luxuriancy. The word *lively* refers to the quickness of the association. The word *rich* or *luxuriant* to the variety of associated ideas.

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order, however, to render the process of the such occasions, a little less mysterious than it only supposed to be, it may be proper to remark, e most copious source of discoveries is the inves- ion of problems; which seldom fails, (even although we should not succeed in the attainment of the object which we have in view,) to exhibit to us some relations formerly unobserved among the quantities which are under consideration. Of so great importance is it to concentrate the attention to a particular subject, and to check that wandering and dissipated habit of thought, which, in the case of most persons, renders their speculations barren of any profit either to themselves or to others. Many theorems, too, have been suggested by analogy; many have been investigated from truths formerly known, by altering or by generalizing the hypothesis; and many have been obtained by a species of induction. An illustration of these various processes of the mind would not only lead to new and curious remarks, but would contribute to diminish that blind admiration of original genius, which is one of the chief obstacles to the improvement of science.

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* See some other passages to the same purpose, quoted from different writers, by Dr. Simpson, in the preface to his Restoration of the Loci Plani of Apollonius Pergæus, Glasg. 1749.

The history of natural philosophy, before and after the time of Lord Bacon, affords another proof, how much the powers of invention and discovery may be assisted by the study of method: and in all the sciences, without exception, whoever employs his genius with a regular and habitual success, plainly shows, that it is by means of general rules, that his inquiries are conducted. Of these rules, there may be many which the inventor never stated to himself in words; and, perhaps, he may even be unconscious of the assistance which he derives from them; but their influence on his genius appears unquestionably from the uniformity with which it proceeds; and in proportion as they can be ascertained by his own speculations, or collected by the logician from an examination of his researches, similar powers of invention will be placed within the reach of other men, who apply themselves to the same study.

The following remarks, which a truly philosophical artist has applied to painting, may be extended, with

some trifling alterations, to all the different employments of our intellectual powers.

"What we now call genius, begins, not where rules, abstractedly taken, end; but where known, vulgar, and trite rules have no longer any place.—It must of necessity be, that works of genius, as well as every other effect, as it must have its cause, must likewise have its rules; it cannot be by chance, that excellencies are produced with any constancy, or any certainty, for this is not the nature of chance; but the rule by which men of extraordinary parts, and such as are called men of genius, work, are either such as they discover by their own peculiar observation, or of such a nice texture as not easily to admit handling or expressing in words.

"Unsubstantial, however, as these rules may seem, and difficult as it may be to convey them in writing, they are still seen and felt in the mind of the artist; and he works from them with as much certainty, as if they were embodied, as I may say, upon paper. It is true, these refined principles cannot be always made palpable, like the more gross rules of Art; yet it does not follow, but that the mind may be put in such a train, that it shall perceive, by a kind of scientific sense, that propriety, which words can but very feebly suggest." *

SECTION V.

Application of the Principles stated in the foregoing Sections of this Chapter, to explain the Phenomena of Dreaming.

WITH respect to the Phenomena of Dreaming, three different questions may be proposed. First; what is the state of the mind in sleep? or, in other words, what faculties then continue to operate, and what faculties are then suspended? Secondly; How far do our dreams appear to be influenced by our bodily sensations; and in what respects do they vary, according to the different conditions of the body in health, and in sickness? Thirdly; What is the change which sleep produces on

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* Discourses by Sir Joshua Reynolds.

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The effect of a literal and spiritless translation of a work of genius, has been compared to that of the figures which we see, when we look at the wrong side of a beautiful piece of tapestry. The allusion is ingenious and happy; but the pleasure which we receive from it arises, not merely from the analogy which it presents to us, but from the illustration which it affords of the author's idea. No one, surely, in speaking of a piece of tapestry, would think of comparing the difference between its sides, to that between an original composition and a literal translation!

Cicero, and after him Mr. Locke, in illustrating the difficulty of attending to the subjects of our consciousness, have compared the Mind to the Eye, which sees every object around it, but is invisible to itself. To have compared the Eye, in this respect, to the Mind, would have been absurd.

Mr. Pope's comparison of the progress of youthful curiosity, in the pursuits of science, to that of a traveller among the Alps, has been much, and justly, admired. How would the beauty of the allusion have been diminished, if the Alps had furnished the original subject, and not the illustration!

But although this rule holds in general, I acknowledge, that instances may be produced, from our most celebrated poetical performances, of allusions from material objects, both to the intellectual and the moral worlds. These, however, are comparatively few in number, and are not to be found in descriptive or in didactic works, but in compositions written under the influence of some particular passion, or which are meant to express some peculiarity in the mind of the author. Thus, a melancholy man, who has met with many misfortunes in life, will be apt to moralize on every physical event, and every appearance of nature; because his attention dwells more habitually on human life and conduct, than on the material objects around him. This is

the case with the banished Duke, in Shakspeare's *As you like it,* who, in the language of that Poet,

> "Finds tongues in trees, books in the running brooks,
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But this is plainly a distempered state of the mind; and the allusions please, not so much by the analogies they present, as by the picture they give of the character of the person to whom they have occurred.

2. An allusion pleases, by presenting a new and beautiful image to the mind. The analogy or the resemblance between this image and the principal subject is agreeable of itself, and is indeed necessary, to furnish an apology for the transition which the writer makes; but the pleasure is wonderfully heightened, when the new image thus presented is a beautiful one. The following allusion, in one of Mr. Home's tragedies, appears to me to unite almost every excellence:

> ——"Hope and fear, alternate, sway'd his breast;
> Like light and shade upon a waving field,
> Coursing each other, when the flying clouds
> Now hide, and now reveal, the Sun."

Here the analogy is remarkably perfect; not only between light and hope, and between darkness and fear, but between the rapid succession of light and shade, and the momentary influences of these opposite emotions: while, at the same time, the new image which is presented to us, recalls one of the most pleasing and impressive incidents in rural scenery.

The foregoing observations suggest a reason why the principal stores of Fancy are commonly supposed to be borrowed from the material world. Wit has a more extensive province, and delights to display its power of prompt and unexpected combination over all the various classes of our ideas: but the favorite excursions of Fancy are from intellectual and moral subjects to the appearances with which our senses are conversant. The truth is, that such allusions please more than any others in poetry. According to this limited idea of Fancy, it presupposes, where it is possessed in an eminent degree, an extensive observation of natural objects, and a

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mind susceptible of strong impressions from them. It is thus only that a stock of images can be acquired: and that these images will be ready to present themselves, whenever any analogous subject occurs. And hence probably it is, that poetical genius is almost always united with an exquisite sensibility to the beauties of nature.

Before leaving the subject of Fancy, it may not be improper to remark, that its two qualities are, liveliness and luxuriancy. The word *lively* refers to the quickness of the association. The word *rich* or *luxuriant* to the variety of associated ideas.

IV.—OF INVENTION IN THE ARTS AND SCIENCES.

To these powers of Wit and Fancy, that of Invention in the Arts and Sciences has a striking resemblance. Like them, it implies a command over certain classes of ideas, which, in ordinary men, are not equally subject to the will: and like them, too, it is the result of acquired habits, and not the original gift of nature.

Of the process of the mind in scientific invention, I propose afterwards to treat fully under the article of Reasoning; and I shall therefore confine myself at present to a few detached remarks upon some views of the subject which are suggested by the foregoing inquiries.

Before we proceed it may be proper to take notice of the distinction between Invention and Discovery. The object of the former, as has been frequently remarked, is to produce something which had no existence before; that of the latter, to bring to light something which did exist, but which was concealed from common observation. Thus we say, Otto Guerricke invented the air-pump; Sanctorius invented the thermometer; Newton and Gregory invented the reflecting telescope; Galileo discovered the solar spots; and Harvey discovered the circulation of the blood. It appears, therefere, that improvements in the Arts are properly called *inventions;* and that facts brought to light by means of observation, are properly called *discoveries.*

Agreeably to this analogy is the use which we make of these words, when we apply them to subjects purely intellectual. As truth is eternal and immutable, and has no dependence on our belief or disbelief of it, a person who brings to light a truth formerly unknown, is said to make a discovery. A person, on the other hand, who contrives a new method of discovering truth, is called an inventor. Pythagoras, we say, discovered the forty-seventh proposition of Euclid's first book; Newton discovered the binomial theorem: but he invented the method of prime and ultimate ratios; and he invented the method of fluxions.

In general, every advancement in knowledge is considered as a discovery; every contrivance by which we produce an effect, or accomplish an end, is considered as an invention. Discoveries in science, therefore, unless they are made by accident, imply the exercise of invention; and accordingly, the word invention is commonly used to express originality of genius in the Sciences, as well as in the Arts. It is in this general sense that I employ it in the following observations.

It was before remarked, that in every instance of invention, there is some new idea, or some new combination of ideas, which is brought to light by the inventor; and that, although this may sometimes happen, in a way which he is unable to explain, yet when a man possesses an habitual fertility of invention in any particular Art or Science, and can rely, with confidence, on his inventive powers, whenever he is called upon to exert them; he must have acquired, by previous habits of study, a command over those classes of his ideas, which are subservient to the particular effort that he wishes to make. In what manner this command is acquired, it is not possible, perhaps, to explain completely; but it appears to me to be chiefly in the two following ways. In the first place, by his habits of speculation, he may have arranged his knowledge in such a manner as may render it easy for him to combine, at pleasure, all the various ideas in his mind, which have any relation to the subject about which he is occupied: or, secondly, he may have learned by experience certain general rules, by means of

which he can direct the train of his thoughts into those channels in which the ideas he is in quest of may be most likely to occur to him.

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SECTION V.

Application of the Principles stated in the foregoing Sections of this Chapter, to explain the Phenomena of Dreaming.

WITH respect to the Phenomena of Dreaming, three different questions may be proposed. First; what is the state of the mind in sleep? or, in other words, what faculties then continue to operate, and what faculties are then suspended? Secondly; How far do our dreams appear to be influenced by our bodily sensations; and in what respects do they vary, according to the different conditions of the body in health, and in sickness? Thirdly; What is the change which sleep produces on

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Would the allusion have been equally pleasing, from a general marshalling his soldiers, to Memory and the succession of ideas?

The effect of a literal and spiritless translation of a work of genius, has been compared to that of the figures which we see, when we look at the wrong side of a beautiful piece of tapestry. The allusion is ingenious and happy; but the pleasure which we receive from it arises, not merely from the analogy which it presents to us, but from the illustration which it affords of the author's idea. No one, surely, in speaking of a piece of tapestry, would think of comparing the difference between its sides, to that between an original composition and a literal translation!

Cicero, and after him Mr. Locke, in illustrating the difficulty of attending to the subjects of our consciousness, have compared the Mind to the Eye, which sees every object around it, but is invisible to itself. To have compared the Eye, in this respect, to the Mind, would have been absurd.

Mr. Pope's comparison of the progress of youthful curiosity, in the pursuits of science, to that of a traveller among the Alps, has been much, and justly, admired. How would the beauty of the allusion have been diminished, if the Alps had furnished the original subject, and not the illustration!

But although this rule holds in general, I acknowledge, that instances may be produced, from our most celebrated poetical performances, of allusions from material objects, both to the intellectual and the moral worlds. These, however, are comparatively few in number, and are not to be found in descriptive or in didactic works, but in compositions written under the influence of some particular passion, or which are meant to express some peculiarity in the mind of the author. Thus, a melancholy man, who has met with many misfortunes in life, will be apt to moralize on every physical event, and every appearance of nature; because his attention dwells more habitually on human life and conduct, than on the material objects around him. This is

the case with the banished Duke, in Shakspeare's *As you like it*, who, in the language of that Poet,

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But this is plainly a distempered state of the mind; and the allusions please, not so much by the analogies they present, as by the picture they give of the character of the person to whom they have occurred.

2. An allusion pleases, by presenting a new and beautiful image to the mind. The analogy or the resemblance between this image and the principal subject is agreeable of itself, and is indeed necessary, to furnish an apology for the transition which the writer makes; but the pleasure is wonderfully heightened, when the new image thus presented is a beautiful one. The following allusion, in one of Mr. Home's tragedies, appears to me to unite almost every excellence:

> ——"Hope and fear, alternate, sway'd his breast;
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Here the analogy is remarkably perfect; not only between light and hope, and between darkness and fear, but between the rapid succession of light and shade, and the momentary influences of these opposite emotions: while, at the same time, the new image which is presented to us, recalls one of the most pleasing and impressive incidents in rural scenery.

The foregoing observations suggest a reason why the principal stores of Fancy are commonly supposed to be borrowed from the material world. Wit has a more extensive province, and delights to display its power of prompt and unexpected combination over all the various classes of our ideas: but the favorite excursions of Fancy are from intellectual and moral subjects to the appearances with which our senses are conversant. The truth is, that such allusions please more than any others in poetry. According to this limited idea of Fancy, it presupposes, where it is possessed in an eminent degree, an extensive observation of natural objects, and a

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mind susceptible of strong impressions from them. It is thus only that a stock of images can be acquired: and that these images will be ready to present themselves, whenever any analogous subject occurs. And hence probably it is, that poetical genius is almost always united with an exquisite sensibility to the beauties of nature.

Before leaving the subject of Fancy, it may not be improper to remark, that its two qualities are, liveliness and luxuriancy. The word *lively* refers to the quickness of the association. The word *rich* or *luxuriant* to the variety of associated ideas.

IV.—OF INVENTION IN THE ARTS AND SCIENCES.

To these powers of Wit and Fancy, that of Invention in the Arts and Sciences has a striking resemblance. Like them, it implies a command over certain classes of ideas, which, in ordinary men, are not equally subject to the will: and like them, too, it is the result of acquired habits, and not the original gift of nature.

Of the process of the mind in scientific invention, I propose afterwards to treat fully under the article of Reasoning; and I shall therefore confine myself at present to a few detached remarks upon some views of the subject which are suggested by the foregoing inquiries.

Before we proceed it may be proper to take notice of the distinction between Invention and Discovery. The object of the former, as has been frequently remarked, is to produce something which had no existence before; that of the latter, to bring to light something which did exist, but which was concealed from common observation. Thus we say, Otto Guerricke invented the air-pump; Sanctorius invented the thermometer; Newton and Gregory invented the reflecting telescope; Galileo discovered the solar spots; and Harvey discovered the circulation of the blood. It appears, therefere, that improvements in the Arts are properly called *inventions;* and that facts brought to light by means of observation, are properly called *discoveries.*

Agreeably to this analogy is the use which we make of these words, when we apply them to subjects purely intellectual. As truth is eternal and immutable, and has no dependence on our belief or disbelief of it, a person who brings to light a truth formerly unknown, is said to make a discovery. A person, on the other hand, who contrives a new method of discovering truth, is called an inventor. Pythagoras, we say, discovered the forty-seventh proposition of Euclid's first book; Newton discovered the binomial theorem: but he invented the method of prime and ultimate ratios; and he invented the method of fluxions.

In general, every advancement in knowledge is considered as a discovery; every contrivance by which we produce an effect, or accomplish an end, is considered as an invention. Discoveries in science, therefore, unless they are made by accident, imply the exercise of invention; and accordingly, the word invention is commonly used to express originality of genius in the Sciences, as well as in the Arts. It is in this general sense that I employ it in the following observations.

It was before remarked, that in every instance of invention, there is some new idea, or some new combination of ideas, which is brought to light by the inventor; and that, although this may sometimes happen, in a way which he is unable to explain, yet when a man possesses an habitual fertility of invention in any particular Art or Science, and can rely, with confidence, on his inventive powers, whenever he is called upon to exert them; he must have acquired, by previous habits of study, a command over those classes of his ideas, which are subservient to the particular effort that he wishes to make. In what manner this command is acquired, it is not possible, perhaps, to explain completely; but it appears to me to be chiefly in the two following ways. In the first place, by his habits of speculation, he may have arranged his knowledge in such a manner as may render it easy for him to combine, at pleasure, all the various ideas in his mind, which have any relation to the subject about which he is occupied: or, secondly, he may have learned by experience certain general rules, by means of

which he can direct the train of his thoughts into those channels in which the ideas he is in quest of may be most likely to occur to him.

1. The former of these observations I shall not stop to illustrate particularly at present, as the same subject will occur afterwards, under the article of Memory. It is sufficient for my purpose, in this chapter, to remark, that as habits of speculation have a tendency to classify our ideas, by leading us to refer particular facts and particular truths to general principles; and as it is from an approximation and comparison of related ideas, that new discoveries in most instances result; the knowledge of the philosopher, even supposing that it is not more extensive, is arranged in a manner much more favorable to invention, than in a mind unaccustomed to system.

How much invention depends on a proper combination of the materials of our knowledge, appears from the resources which occur to men of the lowest degree of ingenuity, when they are pressed by any alarming difficulty and danger, and from the unexpected exertions made by very ordinary characters, when called to situations which rouse their latent powers. In such cases, I take for granted, that necessity operates in producing invention, chiefly by concentrating the attention of the mind to one set of ideas, by leading us to view these in every light, and to combine them variously with each other. As the same idea may be connected with an infinite variety of others by different relations, it may, according to circumstances, at one time, suggest one of these ideas, and, at another time, a different one. When we dwell long on the same idea, we obtain all the others to which it is any way related, and thus are furnished with materials on which our powers of judgment and reasoning may be employed. The effect of the division of labor in multiplying mechanical contrivances, is to be explained partly on the same principle. It limits the attention to a particular subject, and familiarizes to the mind all the possible combinations of ideas which have any relation to it.

These observations suggest a remarkable difference between Invention and Wit. The former depends, in

most instances, on a combination of those ideas, which are connected by the less obvious principles of association; and it may be called forth in almost any mind by the pressure of external circumstances. The ideas which must be combined, in order to produce the latter, are chiefly such as are associated by those slighter connexions which take place, when the mind is careless and disengaged. "If you have real wit," says Lord Chesterfield, "it will flow spontaneously, and you need not aim at it; for in that case, the rule of the gospel is reversed; and it will prove, seek and you shall not find." Agreeably to this observation, wit is promoted by a certain degree of intoxication, which prevents the exercise of that attention which is necessary for invention in matters of Science. Hence too it is, that those who have the reputation of Wits, are commonly men confident in their own powers, who allow the train of their ideas to follow, in a great measure, its natural course, and hazard, in company, every thing, good or bad, that occurs to them. Men of modesty and taste seldom attempt wit in a promiscuous society, or if they are forced to make such an exertion, they are seldom successful. Such men, however, in a circle of their friends, to whom they can unbosom themselves without reserve, are frequently the most amusing and the most interesting of companions; as the vivacity of their wit is tempered by a correct judgment, and refined manners, and as its effect is heightened by that sensibility and delicacy with which we so rarely find it accompanied in the common intercourse of life.

When a man of wit makes an exertion to distinguish himself, his sallies are commonly too far fetched to please. He brings his mind into a state approaching to that of the inventor, and becomes rather ingenious than witty. This is often the case with the writers whom Johnson distinguishes by the name of the Metaphysical Poets.

Those powers of invention, which necessity occasionally calls forth in uncultivated minds, some individuals possess habitually. The related ideas which, in the case of the former, are brought together by the slow

efforts of attention and recollection, present themselves to the latter, in consequence of a more systematical arrangement of their knowledge. The instantaneousness with which such remote combinations are effected, sometimes appear so wonderful, that we are apt to ascribe it to something like inspiration ; but it must be remembered, that when any subject strongly and habitually occupies the thoughts, it gives us an interest in the observation of the most trivial circumstance which we suspect to have any relation to it, however distant ; and by thus rendering the common objects and occurrences which the accidents of life present to us, subservient to one particular employment of the intellectual powers, establishes in the memory a connexion between our favorite pursuit, and all the materials with which experience and reflection have supplied us for the farther prosecution of it.

II. I observed, in the second place, that invention may be facilitated by general rules, which enable the inventor to direct the train of his thoughts into particular channels. These rules (to ascertain which ought to be one principal object of the logician) will afterwards fall under my consideration, when I come to examine those intellectual processes which are subservient to the discovery of truth. At present, I shall confine myself to a few general remarks ; in stating which I have no other aim, than to show, to how great a degree invention depends on cultivation and habit, even in those sciences in which it is generally supposed that every thing depends on natural genius.

When we consider the geometrical discoveries of the ancients, in the form in which they are exhibited in the greater part of the works which have survived to our times, it is seldom possible for us to trace the steps by which they were led to their conclusions : and, indeed, the objects of this science are so unlike those of all others, that it is not unnatural for a person when he enters on the study, to be dazzled by its novelty, and to form an exaggerated conception of the genius of those men who first brought to light such a variety of truths, so profound and so remote from the ordinary course of our

speculations. We find, however, that even at the time when the ancient analysis was unknown to the moderns, such mathematicians as had attended to the progress of the mind in the discovery of truth, concluded *a priori*, that the discoveries of the Greek geometers did not, at first, occur to them in the order in which they are stated in their writings. The prevailing opinion was, that they had possessed some secret method of investigation, which they carefully concealed from the world; and that they published the result of their labors in such a form, as they thought would be most likely to excite the admiration of their readers. "O quam bene foret," says *Petrus Nonius*, "si qui in scientiis mathematicis scripserint authores, scripta reliquissent inventa sua eâdem methodo, et per eosdem discursus, quibus ipsi in ea primum inciderunt; et non, ut in mechanicâ loquitur Aristoteles de artificibus, qui nobis foris ostendunt suas quas fecerint machinas, sed artificium abscondunt, ut magis appareant admirabiles. Est utique inventio in arte quâlibet diversa multum a traditione: neque putandum est plurimas Euclidis et Archimedis propositiones fuisse ab illis eâ viâ inventas quâ nobis illi ipsas tradiderunt."* The revival of the ancient analysis by some late mathematicians in this country, has, in part, justified these remarks, by showing to how great a degree the inventive powers of the Greek geometers were aided by that method of investigation; and by exhibiting some striking specimens of address in the practical application of it.

The solution of problems, indeed, it may be said, is but one mode in which mathematical invention may be displayed. The discovery of new truths is what we chiefly admire in an original genius; and the method of analysis gives us no satisfaction with respect to the process by which they are obtained.

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those parts of the *body*, with which our mental operations are more immediately connected; and how does this change operate, in diversifying, so remarkably, the phenomena which our minds then exhibit, from those of which we are conscious in our waking hours? Of these three questions, the first belongs to the philosophy of the Human Mind; and it is to this question that the following inquiry is almost entirely confined. The second is more particularly interesting to the medical inquirer, and does not properly fall under the plan of this work. The third seems to me to relate to a subject, which is placed beyond the reach of the human faculties.

It will be granted, that, if we could ascertain the state of the mind in sleep, so as to be able to resolve the various phenomena of dreaming into a smaller number of general principles; and still more, if we could resolve them into one general fact, we should be advanced a very important step in our inquiries upon this subject; even although we should find it impossible to show, in what manner this change in the state of the mind results from the change which sleep produces in the state of the body. Such a step would at least gratify, to a certain extent, that disposition of our nature which prompts us to ascend from particular facts to general laws, and which is the foundation of all our philosophical researches: and, in the present instance, I am inclined to think, that it carries us as far as our imperfect faculties enable us to proceed.

In conducting this inquiry with respect to the state of the mind in sleep, it seems reasonable to expect, that some light may be obtained from an examination of the circumstances which accelerate or retard its approach; for when we are disposed to rest, it is natural to imagine, that the state of the mind approaches to its state in sleep, more nearly, than when we feel ourselves alive and active, and capable of applying all our various faculties to their proper purposes.

In general, it may be remarked, that the approach of sleep is accelerated by every circumstance which diminishes or suspends the exercise of the mental powers, and is retarded by every thing which has a contrary tendency. When we wish for sleep, we naturally endeavour to withhold, as much as possible, all the active exertions of the mind, by disengaging our attention from every interesting subject of thought. When we are disposed to keep awake, we naturally fix our attention on some subject which is calculated to afford employment to our intellectual powers, or to rouse and exercise the active principles of our nature.

It is well known, that there is a particular class of sounds which compose us to sleep. The hum of bees; the murmur of a fountain; the reading of an uninteresting discourse, have this tendency in a remarkable degree. If we examine this class of sounds, we shall find that it consists wholly of such as are fitted to withdraw the attention of the mind from its own thoughts, and are, at the same time, not sufficiently interesting to engage its attention to themselves.

It is also matter of common observation, that children and persons of little reflection, who are chiefly occupied about sensible objects, and whose mental activity is, in a great measure, suspended, as soon as their perceptive powers are unemployed, find it extremely difficult to continue awake, when they are deprived of their usual engagements. The same thing has been remarked of savages, whose time, like that of the lower animals, is almost completely divided between sleep and their bodily exertions.*

From a consideration of these facts, it seems reasonable to conclude, that in sleep those operations of the mind are suspended, which depend on our volition; for if it be certain, that before we fall asleep, we must withhold, as much as we are able, the exercise of all our different powers, it is scarcely to be imagined, that, as soon as sleep commences, these powers should again begin to be exerted. The more probable conclusion is, that when we are desirous to procure sleep, we bring both mind and body, as nearly as we can, into that state in which they are to continue after sleep commences. The difference, therefore, between the state of the mind when we are inviting sleep, and when we are actually asleep, is this; that in the former case, although its active exertions be suspended, we can renew them, if we please. In the other case, the will loses its influence over all our powers both of mind and body, in consequence of some physical alteration in the system, which we shall never, probably, be able to explain.

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* "The existence of the Negro slaves in America, appears to participate more of sensation than reflection. To this must be ascribed, their disposition to sleep when abstracted from their diversions, and unemployed in their labor. An animal whose body is at rest, and who does not reflect, must be disposed to sleep of course."—*Notes on Virginia, by Mr.* JEFFERSON, p. 225.

In order to illustrate this conclusion a little further, it may be proper to remark, that if the suspension of our voluntary operations in sleep be admitted as a fact, there are only two suppositions which can be formed concerning its cause. The one is, that the power of volition is suspended; the other, that the will loses its influence over those faculties of the mind, and those members of the body, which, during our waking hours, are subjected to its authority. If it can be shown then, that the former supposition is not agreeable to fact, the truth of the latter seems to follow as a necessary consequence.

1. That the power of volition is not suspended during sleep, appears from the efforts which we are conscious of making while in that situation. We dream, for example, that we are in danger, and we attempt to call out for assistance. The attempt, indeed, is, in general, unsuccessful; and the sounds which we emit, are feeble and indistinct; but this only confirms, or, rather, is a necessary consequence of the supposition, that, in sleep, the connexion between the will and our voluntary operations is disturbed or interrupted. The continuance of the power of volition is demonstrated by the effort, however ineffectual.

In like manner, in the course of an alarming dream, we are sometimes conscious of making an exertion to save ourselves, by flight from an apprehended danger, but in spite of all our efforts, we continue in bed. In such cases, we commonly dream, that we are attempting to escape, and are prevented by some external obstacle; but the fact seems to be, that the body is, at that time, not subject to the will. During the disturbed rest which we sometimes have when the body is indisposed, the mind appears to retain some power over it; but as, even in these cases, the motions which are made consist rather of a general agitation of the whole system, than of the regular exertion of a particular member of it, with a view to produce a certain effect, it is reasonable to conclude, that, in perfectly sound sleep, the mind, although it retains the power of volition, retains no influence whatever over the bodily organs.

In that particular condition of the system, which is known by the name of *incubus*, we are conscious of a total want of power over the body: and, I believe, the common opinion is, that it is this want of power which distinguishes the *incubus* from all the other modifications of sleep. But the more probable supposition seems to be, that every species of sleep is accompanied with a suspension of the faculty of voluntary motion; and that the *incubus* has nothing peculiar in it but this, that the uneasy sensations which are produced by the accidental posture of the body, and which we find it impossible to remove by our own efforts, render us distinctly conscious of our incapacity to move. One thing is certain, that the instant of our awaking, and of our recovering the command of our bodily organs, is one and the same.

2. The same conclusion is confirmed by a different view of the subject. It is probable, as was already observed, that when we are anxious to procure sleep, the state into which we naturally bring the mind, approaches to its state after sleep commences. Now it is manifest, that the means which nature directs us to employ on such occasions, is not to suspend the power of volition, but to suspend the exertion of those powers whose exercise depends on volition. If it were necessary that volition should be suspended before we fall asleep, it would be impossible for us, by our own efforts, to hasten the moment of rest. The very supposition of such efforts is absurd, for it implies a continued will to suspend the acts of the will.

According to the foregoing doctrine with respect to the state of the mind in sleep, the effect which is produced on our mental operations, is strikingly analogous to that which is produced on our bodily powers. From the observations which have been already made, it is manifest, that in sleep, the body is, in a very inconsiderable degree, if at all, subject to our command. The vital and involuntary motions, however, suffer no interruption, but go on as when we are awake, in consequence of the operation of some cause unknown to us. In like manner, it would appear, that those operations of the mind which depend on our volition are suspended; while certain other operations are, at least, occasionally, carried on. This analogy naturally suggests the idea, that *all* our mental operations, which are independent of our will, may continue during sleep; and that the phenomena of dreaming may, perhaps, be produced by these, diversified in their apparent effects, in consequence of the suspension of our voluntary powers.

If the appearances which the mind exhibits during sleep, are found to be explicable on this general principle, it will possess all the evidence which the nature of the subject admits of.

It was formerly shown, that the train of thought in the mind does not depend *immediately* on our will, but is regulated by certain general laws of association. At the same time, it appeared, that among the various subjects which thus spontaneously present themselves to our notice, we have the power of singling out any one that we choose to consider, and of making it a particular object of attention; and that by doing so, we not only can stop the train that would otherwise have succeeded, but frequently can divert the current of our thoughts into a new channel. It also appeared that we have a power (which may be much improved by exercise) of recalling past occurrences to the memory, by a voluntary effort of recollection.

The *indirect* influence which the mind thus possesses over the train of its thoughts is so great, that during the whole time we are awake, excepting in those cases in which we fall into what is called a reverie, and suffer our thoughts to follow their natural course, the order of their succession is always regulated more or less by the will. The will, indeed, in regulating the train of thought, can operate only (as I already showed) by availing itself of the established laws of association; but still it has the power of rendering this train very different from what it would have been, if these laws had taken place without its interference.

From these principles, combined with the general fact which I have endeavoured to establish, with respect to the state of the mind in sleep, two obvious consequences follow: First, that when we are in this situation, the succession of our thoughts, in so far as it depends on the laws of association, may be carried on by the operation of the same unknown causes by which it is produced while we are awake; and, Secondly, that the order of our thoughts, in these two states of the mind, must be very different; inasmuch as, in the one, it depends solely on the laws of association, and in the other, on these laws, combined with our own voluntary exertions.

In order to ascertain how far these conclusions are agreeable to truth, it is necessary to compare them with the known phenomena of dreaming. For which purpose, I shall endeavour to show, First, that the succession of our thoughts in sleep is regulated by the same general laws of association, to which it is subjected while we are awake; and, Secondly, that the circumstances which discriminate dreaming from our waking thoughts, are such as must necessarily arise from the suspension of the influence of the will.

I. That the succession of our thoughts in sleep, is regulated by the same general laws of association, which influence the mind while we are awake, appears from the following considerations.

1. Our dreams are frequently suggested to us by bodily sensations: and with these, it is well known, from what we experience while awake, that particular ideas are frequently very strongly associated. I have been told by a friend, that having occasion, in consequence of an indisposition, to apply a bottle of hot water to his

feet when he went to bed, he dreamed that he was making a journey to the top of Mount Ætna, and that he found the heat of the ground almost insupportable, Another person having a blister applied to his head, dreamed that he was scalped by a party of Indians. I believe every one who is in the habit of dreaming, will recollect instances, in his own case, of a similar nature.

2. Our dreams are influenced by the prevailing temper of the mind; and vary, in their complexion, according as our habitual disposition, at the time, inclines us to cheerfulness or to melancholy. Not that this observation holds without exception; but it holds so generally, as must convince us, that the state of our spirits has some effect on our dreams, as well as on our waking thoughts. Indeed, in the latter case, no less than in the former, this effect may be counteracted, or modified, by various other circumstances.

After having made a narrow escape from any alarming danger, we are apt to awake, in the course of our sleep, with sudden startings, imagining that we are drowning, or on the brink of a precipice. A severe misfortune, which has affected the mind deeply, influences our dreams in a singular way, and suggests to us a variety of adventures, analogous, in some measure, to that event from which our distress arises. Such, according to Virgil, were the dreams of the forsaken Dido.

> ——"Agit ipse furentem
> In somnis ferus Æneas; semperque relinqui
> Sola sibi; semper longam incomitata videtur
> Ire viam, et Tyrios desertâ quærere terrâ."

3. Our dreams are influenced by our prevailing habits of association while awake.

In a former part of this work, I considered the extent of that power which the mind may acquire over the train of its thoughts; and I observed, that those intellectual diversities among men, which we commonly refer to peculiarities of genius, are, at least in a great measure, resolvable into differences in their habits of association. One man possesses a rich and beautiful fancy, which is at all times obedient to his will. Another possesses a quickness of recollection, which enables him, at a moment's warning, to bring together all the results of his past experience, and of his past reflections, which can be of use for illustrating any proposed subject. A third can, without effort, collect his attention to the most abstract questions in philosophy, can perceive, at a glance, the shortest and the most effectual process for arriving at the truth, and can banish from his mind every extraneous idea, which fancy or casual association may suggest, to distract his thoughts, or to mislead his judgment. A fourth unites all these powers in a capacity of perceiving truth with an almost intuitive rapidity, and in an eloquence which enables him to command, at pleasure, whatever his memory and his fancy can supply, to illustrate and to adorn it. The occasional exercise which such men make of their powers, may undoubtedly be said, in one sense, to be unpremeditated or unstudied; but they all indicate previous *habits* of meditation or study, as unquestionably, as the dexterity of the expert accountant, or the rapid execution of the professional musician.

From what has been said, it is evident, that a train of thought which, in one man, would require a painful effort of study, may, in another, be almost spontaneous; nor is it to be doubted, that the reveries of studious men, even when they allow, as much as they can, their thoughts to follow their own course, are more or less connected together by those principles of association, which their favorite pursuits tend more particularly to strengthen.

The influence of the same habits may be traced distinctly in sleep. There are probably few mathematicians, who have not dreamed of an interesting problem, and who have not even fancied that they were prosecuting the investigation of it with much success. They whose ambition leads them to the study of eloquence, are frequently conscious, during sleep, of a renewal of their daily occupations; and sometimes feel themselves possessed of a fluency of speech, which they never experienced before. The Poet, in his dreams, is transported into Elysium, and leaves the vulgar and unsatisfactory enjoyments of humanity, to dwell in those regions of enchantment and rapture, which have been created by the divine imaginations of Virgil and of Tasso.

> " And hither Morpheus sent his kindest dreams,
> Raising a world of gayer tinct and grace;
> O'er which were shadowy cast Elysian gleams,
> That played in waving lights from place to place,
> And shed a roseate smile on Nature's face.
> Not Titian's pencil e'er could so array,
> So fleece with clouds the pure ethereal space;
> Nor could it e'er such melting forms display,
> As loose on flowery beds all languishingly lay.
> " No, fair illusions! artful phantoms, no!
> My Muse will not attempt your fairy land:
> She has no colors, that like yours can glow;
> To catch your vivid scenes, too gross her hand." *

As a farther proof that the succession of our thoughts in dreaming, is influenced by our prevailing habits of association; it may be remarked, that the scenes and occurrences which most frequently present themselves to the mind while we are asleep, are the scenes and occurrences of childhood and early youth. The facility of association is then much greater than in more advanced years; and although, during the day, the menory of the events thus associated, may be banished by the objects and pursuits which press upon our senses, it retains a more permanent hold of the mind than any of our subsequent acquisitions; and, like the knowledge which we possess of our mother tongue, is, as it were, interwoven and incorporated with all its most essential habits. Accordingly, in old men, whose thoughts are, in a great measure, disengaged from the world, the transactions of their middle age, which once seemed so important, are often obliterated; while the mind dwells, as in a dream, on the sports and the companions of their infancy.

I shall only observe farther, on this head, that in our dreams, as well as when awake, we occasionally make use of words as an instrument of thought. Such dreams, however, do not affect the mind with such emotions of pleasure and of pain, as those in which the imagination is occupied with particular objects of sense.

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* Castle of Indolence.

The effect of philosophical studies, in habituating the mind to the almost constant employment of this instrument, and, of consequence, its effect in weakening the imagination, was formerly remarked. If I am not mistaken, the influence of these circumstances may also be traced in the history of our dreams; which, in youth, commonly involve, in a much greater degree, the exercise of imagination; and affect the mind with much more powerful emotions, than when we begin to employ our maturer faculties in more general and abstract speculations.

II. From these different observations, we are authorized to conclude, that the same laws of association which regulate the train of our thoughts while we are awake, continue to operate during sleep. I now proceed to consider, how far the circumstances which discriminate dreaming from our waking thoughts, correspond with those which might be expected to result from the suspension of the influence of the will.

1. If the influence of the will be suspended during sleep, all our voluntary operations, such as recollection, reasoning, &c. must also be suspended.

That this really is the case, the extravagance and inconsistency of our dreams are sufficient proofs. We frequently confound together times and places the most remote from each other; and, in the course of the same dream, conceive the same person as existing in different parts of the world. Sometimes we imagine ourselves conversing with a dead friend, without remembering the circumstance of his death, although perhaps it happened but a few days before, and affected us deeply. All this proves clearly, that the subjects which then occupy our thoughts, are such as present themselves to the mind spontaneously; and that we have no power of employing our reason in comparing together the different parts of our dreams, or even of exerting an act of recollection, in order to ascertain how far they are consistent and possible.

The processes of reasoning, in which we sometimes fancy ourselves to be engaged during sleep, furnish no exception to the foregoing observation; for although every such process, the first time we form it, implies volition; and, in particular, implies a recollection of the premises, till we arrive at the conclusion; yet when a number of truths have been often presented to us as necessarily connected with each other, this series may afterwards pass though the mind, according to the laws of association, without any more activity on our part, than in those trains of thought which are the most loose and incoherent. Nor is this mere theory. I may venture to appeal to the consciousness of every man accustomed to dream, whether his reasonings during sleep do not seem to be carried on without any exertion of his will, and with a degree of facility, of which he was never conscious while awake. Mr. Addison, in one of his Spectators, has made this observation; and his testimony, in the present instance, is of the greatest weight, that he had no particular theory on the subject to support. "There is not," says he, "a more painful action of the mind than invention, yet in dreams it works with that ease and activity, that we are not sensible when the faculty is employed. For instance, I believe every one, some time or other, dreams that he is reading papers, books, or letters; in which case the invention prompts so readily, that the mind is imposed on, and mistakes its own suggestions for the composition of another."*

2. If the influence of the will during sleep be suspended, the mind will remain as passive, while its thoughts change from one subject to another, as it does during our waking hours, while different perceptible objects are presented to our senses.

Of this passive state of the mind in our dreams, it is unnecessary to multiply proofs; as it has always been considered as one of the most extraordinary circumstances with which they are accompanied. If our dreams, as well as our waking thoughts, were subject to the will, is it not natural to conclude, that, in the one case, as well as in the other, we would endeavor to banish, as much as we could, every idea which had a tendency to disturb us; and detain those only which we found to be agreeable? So far, however, is this power over our thoughts from being exercised, that we are frequently oppressed, in spite of all our efforts to the contrary, with dreams which affect us with the most painful emotions. And, indeed, it is matter of vulgar remark, that our dreams are, in every case, involuntary on our part; and that they appear to be obtruded on us by some external cause. This fact appeared so unaccountable to the late Mr. Baxter, that it gave rise to his very whimsical theory, in which he ascribes dreams to the immediate influence of separate spirits on the mind.

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* No. 487.

3. If the influence of the will be suspended during sleep, the *conceptions* which we then form of sensible objects will be attended with a belief of their real existence, as much as the *perception* of the same objects is while we are awake.

In treating of the power of Conception, I formerly observed, that our belief of the separate and independent existence of the objects of our perceptions, is the result of experience; which teaches us that these perceptions do not depend on our will. If I open my eyes, I cannot prevent myself from seeing the prospect before me. The case is different with respect to our conceptions. While they occupy the mind, to the exclusion of every thing else, I endeavoured to show, that they are always accompanied with belief; but as we can banish them from the mind, during our waking hours, at pleasure, and as the momentary belief which they produce, is continually checked by the surrounding objects of our perceptions, we learn to consider them as fictions of our own creation; and, excepting in some accidental cases, pay no regard to them in the conduct of life. If the doctrine, however, formerly stated with respect to conception, be just, and if, at the same time, it be allowed, that sleep suspends the influence of the will over the train of our thoughts, we should naturally be led to expect, that the same belief which accompanies perception while we are awake, should accompany the conceptions which occur to us in our dreams. It is scarcely necessary for me to remark, how strikingly this conclusion coincides with acknowledged facts.

May it not be considered as some confirmation of the foregoing doctrine, that when opium fails in producing complete sleep, it commonly produces *one* of the effects of sleep, by suspending the activity of the mind, and throwing it into a reverie; and that while we are in this state, our conceptions frequently affect us nearly in the same manner, as if the objects conceived were present to our senses?*

Another circumstance with respect to our conceptions during sleep, deserves our notice. As the subjects which we then think upon, occupy the mind exclusively; and as the attention is not diverted by the objects of our external senses, our conceptions must be proportionably lively and steady. Every person knows how faint the conception is which we form of any thing, with our eyes open, in comparison of what we can form with our eyes shut: and that, in proportion as we can suspend the exercise of all our other senses, the liveliness of our conception increases. To this cause is to be ascribed, in part, the effect which the dread of spirits in the dark has on some persons, who are fully convinced in speculation, that their apprehensions are groundless; and to this also is owing the effect of any accidental perception in giving them a momentary relief from their terrors. Hence the remedy which nature points out to us, when we find ourselves overpowered by imagination. If every thing around us be silent, we endeavour to create a noise, by speaking aloud, or beating with our feet; that is, we strive to divert the attention from the subjects of our imagination, by presenting an object to our powers of perception. The conclusion which I draw from these observations is, that, as there is no state of the body in which our perceptive powers are so totally unemployed as in sleep, it is natural to think, that the objects which we conceive or imagine, must then make an impression on the mind, beyond comparison greater, than any thing of which we can have experience while awake.

From these principles may be derived a simple, and, I think, a satisfactory explanation of what some writers have represented as the most mysterious of all the circumstances connected with dreaming; the inaccurate estimates we are apt to form of Time, while we are thus employed;—an inaccuracy which sometimes extends so far, as to give to a single instant the appearance of hours, or perhaps of days. A sudden noise, for example, suggests a dream connected with that perception; and, the moment afterwards, this noise has the effect of awaking us, and yet, during that momentary interval, a long series of circumstances has passed before the imagination. The story quoted by Mr. Addison * from the Turkish Tales, of the miracle wrought by a Mahometan Doctor, to convince an infidel Sultan, is, in such cases, nearly verified.

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* See the Baron de Tott's Account of the Opium-takers at Constantinople.

The facts I allude to at present are generally explained by supposing, that, in our dreams, the rapidity of thought is greater than while we are awake: but there is no necessity for having recourse to such a supposition. The rapidity of thought is, at all times, such, that, in the twinkling of an eye, a crowd of ideas may pass before us, to which it would require a long discourse to give utterance; and transactions may be conceived, which it would require days to realize. But, in sleep, the conceptions of the mind are mistaken for realities; and therefore, our estimates of time will be formed, not according to our experience of the rapidity of thought, but according to our experience of the time requisite for realizing what we conceive. Something perfectly analogous to this may be remarked in the perceptions we obtain by the sense of sight. When I look into a showbox, where the deception is imperfect, I see only a set of paltry daubings of a few inches diameter, but if the representation be executed with so much skill, as to convey to me the idea of a distant prospect, every object before me swells in its dimensions, in proportion to the extent of space which I conceive it to occupy, and what seemed before to be shut up within the limits of a small

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* SPECTATOR, No. 94.

wooden frame, is magnified, in my apprehension, to an immense landscape of woods, rivers, and mountains.

The phenomena which we have hitherto explained, take place when sleep seems to be complete; that is, when the mind loses its influence over all those powers whose exercise depends on its will. There are, however, many cases in which sleep seems to be partial; that is, when the mind loses its influence over *some* powers, and retains it over others. In the case of the *somnambuli*, it retains its power over the limbs, but it possesses no influence over its own thoughts, and scarcely any over the body, excepting those particular members of it which are employed in walking. In madness, the power of the will over the body remains undiminished, while its influence in regulating the train of thought is in a great measure suspended; either in consequence of a particular idea, which engrosses the attention, to the exclusion of every thing else, and which we find it impossible to banish by our efforts; or in consequence of our thoughts succeeding each other with such rapidity, that we are unable to stop the train. In both of these kinds of madness, it is worthy of remark, that the conceptions or imaginations of the mind becoming independent of our will, they are apt to be mistaken for actual perceptions, and to affect us in the same manner.

By means of this supposition of a partial sleep, any apparent exceptions which the history of dreams may afford to the general principles already stated, admit of an easy explanation.

Upon reviewing the foregoing observations, it does not occur to me, that I have in any instance transgressed those rules of philosophizing, which, since the time of Newton, are commonly appealed to, as the tests of sound investigation. For, in the first place, I have not supposed any causes which are not known to exist; and secondly, I have shown that the phenomena under our consideration are necessary consequences of the causes to which I have referred them. I have not supposed, that the mind acquires in sleep any new faculty of which we are not conscious while awake; but only (what we know to be a fact) that it retains some of its powers, while the exercise of others is suspended : and I have deduced synthetically the known phenomena of dreaming, from the operation of a particular class of our faculties, uncorrected by the operation of another. I flatter myself, therefore, that this inquiry will not only throw some light on the state of the mind in sleep, but that it will have a tendency to illustrate the mutual adaptation and subserviency which exists among the different parts of our constitution, when we are in complete possession of all the faculties and principles which belong to our nature.*

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* See Note (O.)

CHAPTER FIFTH.

PART SECOND.

OF THE INFLUENCE OF ASSOCIATION ON THE INTELLECTUAL AND ON THE ACTIVE POWERS.

SECTION I.

Of the Influence of casual Associations on our speculative Conclusions.

THE Association of Ideas has a tendency to warp our speculative opinions chiefly in the three following ways:

First, by blending together in our apprehensions things which are really distinct in their natures; so as to introduce perplexity and error into every process of reasoning in which they are involved.

Secondly, by misleading us in those anticipations of the future from the past, which our constitution disposes us to form, and which are the great foundation of our conduct in life.

Thirdly, by connecting in the mind erroneous opinions with truths which irresistibly command our assent, and which we feel to be of importance to human happiness.

A short illustration of these remarks will throw light on the origin of various prejudices; and may, perhaps, suggest some practical hints with respect to the conduct of the understanding.

I. I formerly had occasion to mention several instances of very intimate associations formed between two ideas which have no necessary connection with each other. One of the most remarkable is, that which exists in every person's mind between the notions of *color* and of *extension*. The former of these words expresses (at least in the sense in which we commonly employ it) a sensation in the mind; the latter denotes a quality of an external object; so that there is, in fact, no more connexion between the two notions than between those of pain and solidity;* and yet, in consequence of our always perceiving extension, at the same time at which the sensation of color is excited in the mind, we we find it impossible to think of that sensation, without conceiving extension along with it.

Another intimate association is formed in every mind between the ideas of *space* and of *time*. When we think of an interval of duration, we always conceive it as something analogous to a line, and we apply the same language to both subjects. We speak of a *long* and *short time*, as well as of a *long* and *short distance;* and we are not conscious of any metaphor in doing so. Nay, so very perfect does the analogy appear to us, that Boscovich mentions it as a curious circumstance, that extension should have three dimensions, and duration only one.

This apprehended analogy seems to be founded wholly on an association between the ideas of space and of time, arising from our always measuring the one of these quantities by the other. We measure time by motion, and motion by extension. In an hour, the hand of the clock moves over a certain space; in two hours, over double the space; and so on. Hence the ideas of space and of time become very intimately united, and we apply to the latter the words *long* and *short*, *before* and *after*, in the same manner as to the former.

The apprehended analogy between the relation which the different notes in the scale of music bear to each other, and the relation of superiority and inferiority, in respect of position, among material objects, arises also from an accidental association of ideas.

What this association is founded upon, I shall not take upon me to determine; but that it is the effect of accident, appears clearly from this, that it has not only been confined to particular ages and nations, but is the very reverse of an association which was once equally prevalent. It is observed by Dr. Gregory, in the preface to his edition of Euclid's works, that the more ancient of the Greek writers looked upon grave sounds as high, and acute ones as low; and that the present mode of expression on that subject, was an innovation introduced at a latter period.*

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* See Note (P.)

In the instances which have now been mentioned, our habit of combining the notions of two things becomes so strong, that we find it impossible to think of the one, without thinking at the same time of the other. Various other examples of the same species of combination, although, perhaps, not altogether so striking in degree, might easily be collected from the subjects about which our metaphysical speculations are employed. The *sensations*, for instance, which are excited in the mind by external objects, and the *perceptions* of material qualities which follow these sensations, are to be distinguished from each other only by long habits of patient reflection. A clear conception of this distinction may be regarded as the key to all Dr. Ried's reasonings concerning the process of nature in perception; and, till it has once been rendered familiar to the reader, a great part of his writings must appear unsatisfactory and obscure. In truth, our progress in the philosophy of the human mind depends much more on that severe and discriminating judgment, which enables us to separate ideas which nature or habit have immediately combined, than an acuteness of reasoning or fertility of invention. And hence it is, that metaphysical studies are the best of all preparations for those philosophical pursuits which relate to the conduct of life. In none of these do we meet with casual combinations so intimate and indissoluble as those which occur in metaphysics; and he who has been accustomed to such discriminations as this science requires, will not easily be imposed on by that confusion of ideas, which warps the judgments of the multitude in moral, religious, and political inquiries.

From the facts which have now been stated, it is easy to conceive the manner in which the association of ideas has a tendency to mislead the judgment, in the first of the three cases already enumerated. When two subjects of thought are so intimately connected together in the mind, that we find it scarcely possible to consider them apart, it must require no common efforts of attention, to conduct any process of reasoning which relates to either. I formerly took notice of the errors to which we are exposed in consequence of the ambiguity of *words*; and of the necessity of frequently checking and correcting our general reasonings by means of particular examples; but in the cases to which I allude at present, there is (if I may use the expression) an ambiguity of *things*; so that even when the mind is occupied about particulars, it finds it difficult to separate the proper objects of its attention from others with which it has been long accustomed to blend them. The cases, indeed, in which such obstinate and invincible associations are formed among different subjects of thought, are not very numerous, and occur chiefly in our metaphysical researches; but in every mind, casual combinations, of an inferior degree of strength, have an habitual effect in disturbing the intellectual powers, and are not to be conquered without persevering exertions, of which few men are capable. The obvious effects which this tendency to combination produces on the judgment, in confounding together those ideas which it is the province of the metaphysician to distinguish, sufficiently illustrate the mode of its operation in those numerous instances, in which its influence, though not so complete and striking, is equally real, and far more dangerous.

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* See Note (Q.)

II. The association of ideas is a source of speculative error, by misleading us in those anticipations of the future from the past, which are the foundation of our conduct in life.

The great object of philosophy, as I have already remarked more than once, is to ascertain the laws which regulate the succession of events, both in the physical and moral worlds, in order that, when called upon to act in any particular combination of circumstances, we may be enabled to anticipate the probable course of nature from our past experience, and to regulate our conduct accordingly.

As a knowledge of the established connexions among events is the foundation of sagacity and of skill, both in the practical arts, and in the conduct of life, nature has not only given to all men a strong disposition to remark, with attention and curiosity, those phenomena which have been observed to happen nearly at the same time, but has beautifully adapted to the uniformity of her own operations, the laws of association in the human mind. By rendering *contiguity in time* one of the strongest of our associating principles, she has conjoined together in our thoughts, the same events which we have found conjoined in our experience, and has thus accommodated (without any effort on our part) the order of our ideas to that scene in which we are destined to act.

The degree of experience which is necessary for the preservation of our animal existence, is acquired by all men without any particular efforts of study. The laws of nature, which it is most material for us to know, are exposed to the immediate observation of our senses, and establish, by means of the principle of association, a corresponding order in our thoughts, long before the dawn of reason and reflection; or at least long before that period of childhood, to which our recollection afterwards extends.

This tendency of the mind to associate together events which have been presented to it nearly at the same time, although, on the whole, it is attended with infinite advantages, yet, like many other principles of our nature, may occasionally be a source of inconvenience, unless we avail ourselves of our reason and of our experience in keeping it under proper regulation. Among the various phenomena which are continually passing before us, there is a great proportion, whose vicinity in time does not indicate a constancy of conjunction; and unless we be careful to make the distinction between these two classes of connexions, the order of our ideas will be apt to correspond with the one as well as with the other, and our unenlightened experience of the past, will fill the mind, in numberless instances, with vain expectations, or with groundless alarms, concerning the future. This disposition to confound together accidental and permanent connexions, is one great source of popular superstitions. Hence the regard which is paid to unlucky days, to unlucky colors, and to the influence of the planets: apprehensions which render human life, to many, a continued series of absurd terrors. Lucretius compares them to those which children feel, from an idea of the existence of spirits in the dark.

> "Ac veluti pueri trepidant, atque omnia cæcis
> In tenebris metuunt, sic nos in luce timemus
> Interdum nihilo quæ sunt metuenda magis."

Such spectres can be dispelled by the light of philosophy only; which, by accustoming us to trace established connexions, teaches us to despise those which are casual; and, by giving a proper direction to that bias of the mind which is the foundation of superstition, prevents it from leading us astray.

In the instances which we have now been considering, events come to be combined together in the mind, merely from the accidental circumstance of their contiguity in time, at the moment when we perceived them. Such combinations are confined, in a great measure, to uncultivated and unenlightened minds, or to those individuals who, from nature or education, have a more than ordinary facility of association. But there are other accidental combinations which are apt to lay hold of the most vigorous understandings; and from which, as they are the natural and necessary result of a limited experience, no superiority of intellect is sufficient to preserve a philosopher, in the infancy of physical science.

As the connexions among physical events are discovered to us by experience alone, it is evident, that when we see a phenomenon preceded by a number of different circumstances, it is impossible for us to determine, by any reasoning *a priori*, which of these circumstances are to be regarded as the *constant*, and which as the *accidental*, antecedents of the effect. If, in the course of our experience, the same combination of circumstances is always exhibited to us without any alteration, and is invariably followed by the same result, we must for ever remain ignorant, whether this result be connected with the whole combination, or with one or more of the circumstances combined; and therefore if we are anxious, upon any occasion, to produce a similar effect, the only rule that we can follow with perfect security, is to imitate in every particular circumstance the combination which we have seen. It is only where we have an opportunity of separating such circumstances from each other; of combining them variously together; and of observing the effects which result from these different experiments, that we can ascertain with precision, the general laws of nature, and strip physical causes of their accidental and unessential concomitants.

To illustrate this by an example. Let us suppose that a savage, who, in a particular instance, had found himself relieved of some bodily indisposition by a draught of cold water, is a second time afflicted with a similar disorder, and is desirous to repeat the same remedy. With a limited degree of experience which we have here supposed him to possess, it would be impossible for the acutest philosopher in his situation to determine, whether the cure was owing to the water which was drunk, to the cup in which it was contained, to the fountain from which it was taken, to the particular day of the month, or to the particular age of the moon. In order, therefore, to ensure the success of the remedy, he will very naturally, and very wisely, copy, as far as he can recollect, every circumstance which accompanied the first application of it. He will make use of the same cup, draw the water from the same fountain, hold his body in the same posture, and turn his face in the same direction; and thus all the accidental circumstances in which the first experiment was made, will come to be associated equally in his mind with the effect produced. The fountain from which the water was drawn, will be considered as possessed of particular virtues: and the cup from which it was drunk, will be set apart from vulgar uses, for the sake of those who may afterwards have occasion to apply the remedy. It is the enlargement of experience alone, and not any progress in the art of reasoning, which can cure the mind of these associations, and free the practice of medicine from those superstitious observances with which we always find it incumbered among rude nations.

Many instances of this species of superstition might be produced from the works of philosophers who have flourished in more enlightened ages. In particular, many might be produced from the writings of those physical inquirers who immediately succeeded to Lord Bacon; and who, convinced by his arguments, of the folly of all reasonings *a priori*, concerning the laws of nature, were frequently apt to run into the opposite extreme, by recording every circumstance, even the most ludicrous and the most obviously inessential, which attended their experiments.*

The observations which have been hitherto made, relate entirely to associations founded on casual combinations of *material* objects, or of *physical* events. The effects which these associations produce on the understanding, and which are so palpable that they cannot fail to strike the most careless observer, will prepare the reader for the remarks I am now to make, on some analogous prejudices which warp our opinions on still more important subjects.

As the established laws of the material world, which have been exhibited to our senses from our infancy, gradually accommodate to themselves the order of our thoughts, so the most arbitrary and capricious institutions and customs, by a long and constant and exclusive operation on the mind, acquire such an influence in forming the intellectual habits, that every deviation from them not only produces surprise, but is apt to excite sentiments of contempt and of ridicule. A person who has never extended his views beyond that society of which he himself is a member, is apt to consider many peculiarities in the manners and customs of his countrymen as founded on the universal principles of the human constitution; and when he hears of other nations, whose practices in similar cases are different, he is apt to censure them as unnatural, and to despise them as absurd. There are two classes of men who have more particularly been charged with this weakness; those who are placed at the bottom, and those who have reached the summit of the scale of refinement; the former from ignorance, and the latter from national vanity.

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* The ready will scarcely believe, that the following cure for a dysentery, is copied *verbatim* from the works of Mr Boyle:

"Take the thigh-bone of a hanged-man, (perhaps another may serve, but this was still made use of.) calcine it to whiteness, and having purged the patient with an antimonial medicine, give him one dram of this white powder for one dose, in some good cordial, whether conserve or liquor."

For curing this class of prejudices, the obvious expedient which nature points out to us, is to extend our acquaintance with human affairs, either by means of books, or of personal observation. The effects of travelling, in enlarging and in enlightening the mind, are obvious to our daily experience; and similar advantages may be derived (although, perhaps, not in an equal degree) from a careful study of the manners of past ages or of distant nations, as they are described by the historian. In making, however, these attempts for our intellectual improvement, it is of the utmost consequence to us to vary, to a considerable degree, the objects of our attention; in order to prevent any danger of our acquiring an exclusive preference for the caprices of any one people, whose political situation, or whose moral character, may attach us to them as faultless models for our imitation. The same weakness and versatility of mind, the same facility of association, which, in the case of a person who has never extended his views beyond his own community, is a source of national prejudice and of national bigotry, renders the mind, when forced into new situations, easily susceptible of other prejudices no less capricious; and frequently prevents the time, which is devoted to travelling, or to study, from being subservient to any better purpose, than an importation of foreign fashions, or a still more ludicrous imitation of ancient follies.

The philosopher whose thoughts dwell habitually, not merely upon what is, or what has been, but upon what is best and most expedient for mankind; who, to the study of books, and the observation of manners, has added a careful examination of the principles of the human constitution, and of those which ought to regulate the social order, is the only person who is effectually secured against both the weaknesses which I have described. By learning to separate what is essential to morality and to happiness, from those adventitious trifles which it is the province of fashion to direct, he is equally guarded against the follies of national prejudice, and a weak deviation, in matters of indifference, from established ideas. Upon his mind, thus occupied with important subjects of reflection, the fluctuating caprices and fashions of the times lose their influence; while accustomed to avoid the slavery of local and arbitrary habits, he possesses, in his own genuine simplicity of character, the same power of accommodation to external circumstances, which men of the world derive from the pliability of their taste, and the versatility of their manners. As the order, too, of his ideas is accommodated, not to what is casually presented from without, but to his own systematical principles, his associations are subject only to those slow and pleasing changes which arise from his growing light and improving reason; and, in such a period of the world as the present, when the press not only excludes the possibility of a permanent retrogradation in human affairs, but operates with an irresistible though gradual progress, in undermining prejudices and in extending the triumphs of philosophy, he may reasonably indulge the hope, that society will every day approach nearer and nearer to what he wishes it to be. A man of such a character, instead of looking back on the past with regret, finds himself (if I may use the expression) more at *home* in the world, and more satisfied with its order, the longer he lives in it. The melancholy contrasts which old men are sometimes disposed to state, between its condition, when they are about to leave it, and that in which they found it at the commencement of their career, arise, in most cases, from the unlimited influence which in their early years they had allowed to the fashions of the times, in the formation of their characters. How different from those sentiments and prospects which dignified the retreat of Turgot, and brightened the declining years of Franklin!

The querulous temper, however, which is incident to old men, although it renders their manners disagreeable in the intercourse of social life, is by no means the most contemptible form in which the prejudices I have now been describing may display their influence. Such a temper indicates at least a certain degree of observation, in marking the vicissitudes of human affairs, and a certain degree of sensibility in early life, which has connected pleasing ideas with the scenes of infancy and youth. A very great proportion of mankind are, in a great measure, incapable either of the one or of the other; and, suffering themselves to be carried quietly along with the stream of fashion, and finding their opinions and their feelings always in the same relative situation to the fleeting objects around them, are perfectly unconscious of any progress in their own ideas, or of any change in the manners of their age. In vain the philosopher reminds them of the opinions they yesterday held; and forewarns them, from the spirit of the times, of those which they are to hold to-morrow. The opinions of the present moment seem to them to be inseparable from their constitution; and when the prospects are realized, which they lately treated as chimerical, their minds are so gradually prepared for the event, that they behold it without any emotions of wonder or curiosity, and it is to the philosopher alone, by whom it was predicted, that it appears to furnish a subject worthy of future reflection.

The prejudices to which the last observations relate, have their origin in that disposition of our nature, which accommodates the order of our ideas, and our various intellectual habits, to whatever appearances have been long and familiarly presented to the mind. But there are other prejudices, which, by being intimately associated with the essential principles of our constitution, or with the original and universal laws of our belief, are incomparably more inveterate in their nature, and have a far more extensive influence on human character and happiness.

III. The manner in which the association of ideas operates in producing this third class of our speculative errors, may be conceived, in part, from what was formerly said, concerning the superstitious observances, which are mixed with the practice of medicine among rude nations. As all the different circumstances which accompanied the first administration of a remedy, come to be considered as essential to its future success, and are blended together in our conceptions, without any discrimination of their relative importance, so, whatever tenets and ceremonies we have been taught to connect with the religious creed of our infancy, become almost a part of our constitution, by being indissolubly united with truths which are essential to happiness, and which we are led to reverence and to love by all the best dispositions of the heart. The astonishment which the peasant feels, when he sees the rites of a religion different from his own, is not less great than if he saw some flagrant breach of the moral duties, or some direct act of impiety to God; nor is it easy for him to conceive, that there can be any thing worthy in a mind which treats with indifference, what awakens in his own breast all its best and sublimest emotions. "Is it possible," says the old and expiring Bramin, in one of Marmontel's tales, to the young English officer who had saved the life of his daughter, "is it possible, that he to whose compassion I owe the preservation of my child, and who now soothes my last moments with the consolations of piety, should not believe in the god *Vistnou*, and his nine metamorphoses!"

What has now been said on the nature of religious superstition, may be applied to many other subjects. In particular, it may be applied to those political prejudices which bias the judgment even of enlightened men in all countries of the world.

How deeply rooted in the human frame are those important principles, which interest the good man in the prosperity of the world, and more especially in the prosperity of that beloved community to which he belongs! How small, at the same time, is the number of individuals who, accustomed to contemplate one modification alone of the social order, are able to distinguish the circumstances which are essential to human happiness, from those which are indifferent or hurtful! In such a situation, how natural is it for a man of benevolence, to acquire an indiscriminate and superstitious veneration for all the institutions under which he has been educated; as these institutions, however capricious and absurd in themselves, are not only familiarized by habit to all his thoughts and feelings, but are consecrated in his mind by an indissoluble association with duties which nature recommends to his affections, and which reason commands him to fulfil. It is on these accounts that a superstitious zeal against innovation, both in religion and politics, where it is evidently grafted on piety to God, and good will to mankind, however it may excite the sorrow of the more enlightened philosopher, is justly entitled, not only to his indulgence, but to his esteem and affection.

The remarks which have been already made, are sufficient to show, how necessary it is for us, in the formation of our philosophical principles, to examine with care all those opinions which, in our early years, we have imbibed from our instructers; or which are connected with our own local situation. Nor does the universality of an opinion among men who have received a similar education, afford any presumption in its favor; for however great the deference is, which a wise man will always pay to common belief, upon those subjects which have employed the unbiassed reason of mankind, he certainly owes it no respect, in so far as he suspects it to be influenced by fashion or authority. Nothing can be more just than the observation of Fontenelle, that "the number of those who believe in a system already established in the world, does not, in the least, add to its credibility; but that the number of those who doubt of it, has a tendency to diminish it."

The same remarks lead, upon the other hand, to another conclusion of still greater importance; that, notwithstanding the various false opinions which are current in the world, there are some truths which are inseparable from the human understanding, and by means of which, the errors of education, in most instances, are enabled to take hold of our belief.

A weak mind, unaccustomed to reflection, and which has passively derived its most important opinions from habits or from authority, when, in consequence of a more enlarged intercourse with the world, it finds, that ideas which it had been taught to regard as sacred, are treated by enlightened and worthy men with ridicule, is apt to lose its reverence for the fundamental and eternal truths on which these accessory ideas are grafted, and easily falls a prey to that skeptical philosophy which teaches, that all the opinions, and all the principles of action by which mankind are governed, may be traced to the influence of education and example. Amidst the infinite variety of forms, however, which our versatile nature assumes, it cannot fail to strike an attentive observer that there are certain indelible features common to them all. In one situation, we find good men attached to a republican form of government; in another, to a monarchy; but in all situations, we find them devoted to the service of their country and of mankind, and disposed to regard, with reverence and love, the most absurd and capricious institutions which custom has led them to connect with the order of society. The different appearances, therefore, which the political opinions and the political conduct of men exhibit, while they demonstrate to what a wonderful degree human nature may be influenced by situation and by early instruction, evince the existence of some common and original principles, which fit it for the political union, and illustrate the uniform operation of those laws of association, to which, in all the stages of society, it is equally subject.

Similar observations are applicable, and, indeed, in a still more striking degree, to the opinions of mankind on the important questions of religion and morality. The variety of systems which they have formed to themselves concerning these subjects, has often excited the ridicule of the skeptic and the libertine; but if, on the one hand, this variety shows the folly of bigotry, and the reasonableness of mutual indulgence, the curiosity which has led men in every situation to such speculations, and the influence which their conclusions, however absurd, have had on their character and their happiness, prove, no less clearly, on the other, that there must be some principles from which they all derive their origin; and invite the philosopher to ascertain what are these original and immutable laws of the human mind.

"Examine," says Mr. Hume, "the religious principles which have prevailed in the world. You will scarcely be persuaded, that they are any thing but sick men's dreams; or, perhaps, will regard them more as the playsome whimsies of monkeys in human shape, than the serious, positive, dogmatical asseverations of a being, who dignifies himself with the name of rational."—"To oppose the torrent of scholastic religion by such feeble maxims as these, that it is impossible for the same thing to be and not to be; that the whole is greater than a part; that two and three make five; is pretending to stop the ocean with a bulrush." But what is the inference to which we are led by these observations? Is it, (to use the words of this ingenious writer,) "that the whole is a riddle, an enigma, an inexplicable mystery; and that doubt, uncertainty, and suspense, appear the only result of our most accurate scrutiny concerning this subject?" Or should not rather the melancholy histories which he has exhibited of the follies and caprices of superstition, direct our attention to those sacred and indelible characters on the human mind, which all these perversions of reason are unable to obliterate; like that image of himself, which Phidias wished to perpetuate, by stamping it so deeply on the buckler of his *Minerva*; "ut nemo delere posset aut divellere, qui totam statuam non imminueret."* In truth, the more strange the contradictions, and the more ludicrous the ceremonies to which the pride of human reason has thus been reconciled, the stronger is our evidence that religion has a foundation in the nature of man. When the greatest of modern philosophers declares, that "he would rather believe all the fables in the Legend, and the Talmud, and the Alcoran, than that this universal frame is without mind;"† he has expressed the same feeling, which, in all ages and nations, has led good men, unaccustomed to reasoning, to an implicit faith in the creed of their infancy;—a feeling which affords an evidence of the existence of the Deity, incomparably more striking, than if, unmixed with error and undebased by superstition, this most important of all principles had commanded the universal assent of mankind. Where are the other truths, in the whole circle of the sciences, which are so essential to human happiness, as to procure an easy access, not only for themselves, but for whatever opinions may happen to be blended with them? Where are the truths so venerable and commanding, as to impart their own sublimity to every trifling memorial which recalls them to our remembrance; to bestow solemnity and elevation on every mode of expression by which they are conveyed; and which, in whatever scene they have habitually occupied the thoughts, consecrate every object which it presents to our senses, and the very ground we have been accustomed to tread? To attempt to weaken the authority of such impressions, by a detail of the endless variety of forms, which they derive from casual associations, is surely an employment unsuitable to the dignity of philosophy. To the vulgar, it may be amusing, in this, as in other instances, to indulge their wonder at what is new or uncommon; but to the philosopher it belongs to perceive, under all these various disguises, the workings of the same common nature; and in the superstitions of Egypt, no less than in the lofty visions of Plato, to recognise the existence of those moral ties which unite the heart of man to the Author of his being.

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* Select Discourses by JOHN SMITH, p. 119. Cambridge, 1673.
† Lord BACON in his Essays.

SECTION II.

Influence of the Association of Ideas on our Judgments in Matters of Taste.

THE very general observations which I am to make in this Section, do not presuppose any particular theory concerning the nature of Taste. It is sufficient for my purpose to remark, that Taste is not a simple and original faculty, but a power gradually formed by experience and observation. It implies, indeed, as its groundwork, a certain degree of natural sensibility, but it implies also the exercise of the judgment; and is the slow result of an attentive examination and comparison of the agreeable or disagreeable effects produced on the mind by external objects.

Such of my readers as are acquainted with "An Essay on the Nature and Principles of Taste," lately published by Mr. Alison, will not be surprised that I decline the discussion of a subject which he has treated with so much ingenuity and elegance.

The view which was formerly given of the process, by which the general laws of the material world are investigated, and which I endeavoured to illustrate by the state of medicine among rude nations, is strictly applicable to the history of Taste. That certain objects are fitted to give pleasure, and others disgust, to the mind, we know from experience alone; and it is impossible for us, by any reasoning *a priori*, to explain *how* the pleasure or the pain is produced. In the works of nature we find, in many instances, Beauty and Sublimity involved among circumstances, which are either indifferent, or which obstruct the general effect: and it is only by a train of experiments, that we can separate those circumstances from the rest, and ascertain with what particular qualities the pleasing effect is connected. Accordingly the inexperienced artist, when he copies Nature, will copy her servilely, that he may be certain of securing the pleasing effect; and the beauties of his performances will be incumbered with a number of superfluous or of disagreeable concomitants. Experience and observation alone can enable him to make this discrimination, to exhibit the principles of beauty pure and unadulterated, and to form a creation of his own, more faultless than ever fell under the observation of his senses.

This analogy between the progress of Taste from rudeness to refinement, and the progress of physical knowledge from the superstitions of a savage tribe, to the investigation of the laws of nature, proceeds on the supposition, that, as in the material world, there are general facts, beyond which philosophy is unable to proceed, so, in the constitution of man, there is an inexplicable adaptation of the mind to the objects with which these faculties are conversant: in consequence of which these objects are fitted to produce agreeable or disagreeable emotions. In both cases, reasoning may be employed with propriety to refer particular phenomena to general principles; but in both cases, we must at last arrive at principles of which no account can be given, but that such is the will of our Maker.

A great part, too, of the remarks which were made in the last section on the origin of popular prejudices, may be applied to explain the influence of casual associations on Taste; but these remarks do not so completely exhaust the subject, as to supersede the necessity of farther illustration. In matters of Taste, the effects which we consider, are produced on the Mind itself; and are accompanied either with pleasure or with pain. Hence the tendency to casual association is much stronger than it commonly is with respect to physical events; and when such associations are once formed, as they do not lead to any important inconvenience, similar to those which result from physical mistakes, they are not so likely to be corrected by mere experience, unassisted by study. To this it is owing, that the influence of association on our judgments concerning beauty and deformity, is still more remarkable than on our speculative conclusions; a circumstance which has led some philosophers to suppose, that association is sufficient to account for the origin of these notions, and that there is no such thing as a standard of Taste, founded on the principles of the human constitution. But this is undoubtedly pushing the theory a great deal too far. The association of ideas can never account for the origin of a new notion, or of a pleasure essentially different from all the others which we know. It may, indeed, enable us to conceive how a thing indifferent in itself, may become a source of pleasure, by being connected in the mind with something else which is naturally agreeable; but it presupposes, in every instance, the existence of those notions and those feelings which it is its province to combine: insomuch that, I apprehend, it will be found, wherever association produces a change in our judgments on matters of Taste, it does so, by co-operating with some natural principle of the mind, and implies the existence of certain original sources of pleasure and uneasiness.

A mode of dress, which at first appeared awkward, acquires, in a few weeks or months, the appearance of elegance. By being accustomed to see it worn by those whom we consider as models of Taste, it becomes associated with the agreeable impressions which we receive from the ease and grace and refinement of their manners. When it pleases by itself, the effect is to be ascribed, not to the object actually before us, but to the impressions with which it has been generally connected, and which it naturally recalls to the mind.

This observation points out the cause of the perpetual vicissitudes in dress, and in every thing whose chief recommendation arises from fashion. It is evident that, as far as the agreeable effect of an ornament arises from association, the effect will continue only while it is confined to the higher orders. When it is adopted by the multitude, it not only ceases to be associated with ideas of taste and refinement, but it is associated with ideas of affectation, absurd imitation, and vulgarity. It is accordingly laid aside by the higher orders, who studiously avoid every circumstance in external appearance, which is debased by low and common use; and they are led to exercise their invention in the introduction of some new peculiarities, which first become fashionable, then common, and last of all, are abandoned as vulgar.

It has been often remarked, that after a certain period in the progress of society, the public Taste becomes corrupted; and the different productions of the fine arts begin to degenerate from that simplicity, which they had attained in their state of greatest perfection. One reason of this decline is suggested by the foregoing observations.

From the account which has been given of the natural progress of Taste in separating the genuine principles of beauty from superfluous and from offensive concomitants, it is evident, that there is a limit, beyond which the love of simplicity cannot be carried. No bounds, indeed, can be set to the creations of genius; but as this quality occurs seldom in an eminent degree, it commonly happens, that after a period of great refinement of Taste, men begin to gratify their love of variety, by adding superfluous circumstances to the finished models exhibited by their predecessors, or by making other trifling alterations on them, with a view merely of diversifying the effect. These additions and alterations, indifferent, perhaps, or even in some degree offensive in themselves, acquire soon a borrowed beauty, from the connexion in which we see them, or from the influence of fashion: the same cause which at first produced them, continues perpetually to increase their number; and Taste returns to barbarism, by almost the same steps which conducted it to perfection.

The truth of these remarks will appear still more striking to those who consider the wonderful effect which a writer of splendid genius, but of incorrect taste, has in misleading the public judgment. The peculiarities of such an author are consecrated by the connexion in which we see them, and even please, to a certain degree, when detached from the excellencies of his composition, by recalling to us the agreeable impressions with which they have been formerly associated. How many imitations have we seen of the affectations of Sterne, by men who were unable to copy his beauties? And yet these imitations of his defects; of his abrupt manner; of his minute specification of circumstances; and even of his dashes, produce, at first, some effect on readers of sensibility, but of uncultivated taste, in consequence of the exquisite strokes of the pathetic, and the singular vein of humor, with which they are united in the original.

From what has been said, it is obvious, that the circumstances which please, in the objects of Taste, are of two kinds: First, those which are fitted to please by nature, or by associations which all mankind are led to form by their common condition; and secondly, those which please in consequence of associations arising from local and accidental circumstances. Hence, there are two kinds of Taste: the one enabling us to judge of those beauties which have a foundation in the human constitution; the other, of such objects as derive their principal recommendation from the influence of fashion.

These two kinds of Taste are not always united in the same person: indeed, I am inclined to think, that they are united but rarely. The perfection of the one depends much upon the degree in which we are able to free the mind from the influence of casual associations; that of the other, on the contrary, depends on a facility of association which enables us to fall in, at once, with all the turns of the fashion, and (as Shakspeare expresses it) "to catch the tune of the times."

I shall endeavour to illustrate some of the foregoing remarks, by applying them to the subject of language, which affords numberless instances to exemplify the influence which the association of ideas has on our judgments in matters of Taste.

In the same manner in which an article of dress acquires an appearance of elegance or of vulgarity from the persons by whom it is habitually worn, so a particular mode of pronunciation acquires an air of fashion or of rusticity, from the persons by whom it is habitually employed. The Scotch accent is surely in itself as good as the English; and with a few exceptions, is as agreeable to the ear; and yet how offensive does it appear, even to us, who have been accustomed to hear it from our infancy, when compared with that which is used by our southern neighbours!—No reason can be given for this, but that the capital of Scotland is now become a provincial town, and London is the seat of our court.

The distinction which is to be found, in the languages of all civilized nations, between low and polite modes of expression, arises from similar causes. It is, indeed, amusing to remark the solicitude with which the higher orders, in the monarchies of modern Europe, avoid every circumstance in their exterior appearance and manner, which, by the most remote association, may, in the minds of others, connect them with the idea of the multitude. Their whole dress and deportment and conversation are studiously arranged to convey an imposing notion of their consequence; and to recall to the spectator by numberless slight and apparently unintentional hints, the agreeable impressions which are associated with the advantages of fortune.

To this influence of association on language, it is necessary for every writer to attend carefully who wishes to express himself with elegance. For the attainment of correctness and purity in the use of words, the rules of grammarians and of critics may be a sufficient guide; but it is not in the works of this class of authors, that the higher beauties of style are to be studied. As the air and manner of a gentleman can be acquired only by living habitually in the best society, so grace in composition must be attained by an habitual acquaintance with classical writers. It is indeed necessary for our information, that we should peruse occasionally many books which have no merit in point of expression; but I believe it to be extremely useful to all literary men, to counteract the effect of this miscellaneous reading, by maintaining a constant and familiar acquaintance with a few of the most faultless models which the language affords. For want of some standard of this sort, we frequently see an author's taste in writing alter much to the worse in the course of his life; and his later productions fall below the level of his early essays. D'Alembert tells us, that Voltaire had always lying on his table, the Petit Carême of Massillon, and the tragedies of Racine; the former to fix his taste in prose composition, and the latter in poetry.

In avoiding, however, expressions which are debased by vulgar use, there is a danger of running into the other extreme, in quest of fashionable words and phrases. Such an affectation may, for a few years, gratify the vanity of an author, by giving him the air of a man of the world; but the reputation it bestows is of a very transitory nature. The works which continue to please from age to age, are written with perfect simplicity;

while those which captivate the multitude by a display of meretricious ornaments, if, by chance they should survive the fashions to which they are accommodated, remain only to furnish a subject of ridicule to posterity. The portrait of a beautiful woman in the fashionable dress of the day, may please at the moment it is painted; nay, may perhaps please more than in any that the fancy of the artist could have suggested; but it is only in the plainest and simplest drapery, that the most perfect form can be transmitted with advantage to future times. The exceptions which the history of literature seems to furnish to these observations, are only apparent. That, in the works of our best authors, there are many beauties which have long and generally been admired, and which yet owe their whole effect to association, cannot be disputed; but in such cases, it will always be found, that the associations which are the foundation of our pleasure, have, in consequence of some peculiar combination of circumstances, been more widely diffused, and more permanently established among mankind, than those which date their origin from the caprices of our own age are ever likely to be. An admiration for the classical remains of antiquity is, at present, not less general in Europe, than the advantages of a liberal education: and such is the effect of this admiration, that there are certain caprices of Taste, from which no man who is well educated is entirely free. A composition in a modern language, which should sometimes depart from the ordinary modes of expression, from an affectation of the idioms which are consecrated in the classics, would please a very wide circle of readers, in consequence of the prevalence of classical associations; and, therefore, such affectations, however absurd, when carried to a degree of singularity, are of a far superior class to those which are adapted to the fashions of the day. But still the general principle holds true, that whatever beauties derive their original merely from casual association, must appear capricious to those to whom the association does not extend; and that the simplest style is that which continues longest to please, and which pleases most universally. In the writings of Mr. Harris, there is a certain classical air, which will always have many admirers, while ancient learning continues to be cultivated, but which, to a mere English reader, appears somewhat unnatural and ungraceful, when compared with the composition of Swift or of Addison.

The analogy of the arts of statuary and painting may be of use in illustrating these remarks. The influence of ancient times has extended to these, as well as to the art of writing; and in this case, no less than in the other, the transcendant power of genius has established a propriety of choice in matters of indifference, and has, perhaps, consecrated, in the opinion of mankind, some of its own caprices.

"Many of the ornaments of art," says Sir Joshua Reynolds, "those at least for which no reason can be given, are transmitted to us, are adopted, and acquire their consequence, from the company in which we have been used to see them. As Greece and Rome are the fountains from whence have flowed all kinds of excellence, to that veneration which they have a right to claim for the pleasure and knowledge which they have afforded us, we voluntarily add our approbation of every ornament and every custom that belonged to them, even to the fashion of their dress. For it may be observed, that, not satisfied with them in their own place, we make no difficulty of dressing statues of modern heroes or senators in the fashion of the Roman armour, or peaceful robe; and even go so far as hardly to bear a statue in any other drapery.

"The figures of the great men of those nations have come down to us in sculpture. In sculpture remain almost all the excellent specimens of ancient art. We have so far associated personal dignity to the persons thus represented, and the truth of art to their manner of representation, that it is not in our power any longer to separate them. This is not so in painting: because, having no excellent ancient portraits, that connexion was never formed. Indeed, we could no more venture to paint a general officer in a Roman military habit, than we could make a statue in the present uniform. But [illegible] ancient portraits, to show how ready [illegible] those kind of prejudices, we make the [illegible] among the moderns serve the same pur[illegible] great variety of excellent portraits with [illegible] Vandyke has enriched this nation, we are not [illegible] to admire for their real excellence, but extend [illegible] approbation even to the dress which happened to be the fashion of that age. By this means, it must be acknowledged, very ordinary pictures acquired something of the air and effect of the works of Vandyke, and appeared therefore, at first sight, better pictures than they really were. They appeared so, however, to those only who had the means of making this association."*

The influence of association on our notions concerning language, is still more strongly exemplified in poetry than in prose. As it is one great object of the poet, in his serious productions to elevate the imagination of his readers above the grossness of sensible objects, and the vulgarity of common life, it becomes peculiarly necessary for him to reject the use of all words and phrases which are trivial and hackneyed. Among those which are equally pure and equally perspicuous, he, in general, finds it expedient to adopt that which is the least common. Milton prefers the words Rhene and Danaw, to the more common words Rhine and Danube.

> "A multitude, like which the populous North
> Pour'd never from his frozen loins, to pass
> Rhene or the Danaw."†

In the following line,

> "Things unattempted yet in prose or rhyme,"

how much more suitable to the poetical style does the expression appear, than if the author had said,

> "Things unattempted yet in prose or verse."

In another passage, where, for the sake of variety, he has made use of the last phrase, he adds an epithet to remove it a little from the familiarity of ordinary discourse,

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* REYNOLD'S Discourses, p. 313, et seq.

† Paradise Lost, book i. l. 351. See Newton's edit.

——— "in prose or numerous verse."*

In consequence of this circumstance, there arises gradually in every language a poetical diction, which differs widely from the common diction of prose. It is much less subject to the vicissitudes of fashion, than the polite modes of expression in familiar conversation; because when it has once been adopted by the poet, it is avoided by good prose writers, as being too elevated for that species of composition. It may therefore retain its charm as long as the language exists; nay, the charm may increase, as the language grows older.

Indeed the charm of political diction must increase to a certain degree, as polite literature advances. For when once a set of words has been consecrated to poetry, the very sound of them, independently of the ideas they convey, awakens, every time we hear it, the agreeable impressions which were connected with it when we met with them in the performances of our favorite authors. Even when strung together in sentences which convey no meaning, they produce some effect on the mind of a reader of sensibility: an effect, at least, extremely different from that of an unmeaning sentence in prose.

Languages differ from each other widely in the copiousness of their poetical diction. Our own possesses, in this respect, important advantages over the French: not that, in this language, there are no words appropriated to poetry, but because their number is, comparatively speaking, extremely limited.

The scantiness of the French poetical diction is, probably, attended with the less inconvenience, that the phrases which occur in good prose writing are less degraded by vulgar application than in English, in consequence of the line being more distinctly and more strongly drawn between polite and low expressions in that language than in ours. Our poets, indeed, by having a language appropriated to their own purposes, not only can preserve dignity of expression, but can connect with the perusal of their compositions, the pleasing impressions which have been produced by those of their predecessors. And hence, in the higher sorts of poetry where their object is to kindle, as much as possible, the enthusiasm of their readers, they not only avoid, studiously, all expressions which are vulgar, but all such as are borrowed from fashionable life. This certainly cannot be done in an equal degree by a poet who writes in the French language.

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* Paradise Lost, book i. l. 150. See Newton's edit.

In English, the poetical diction is so extremely copious, that it is liable to be abused; as it puts it in the power of authors of no genius, merely by ringing changes on the poetical vocabulary, to give a certain degree of currency to the most unmeaning compositions. In Pope's *Song by a Person of Quality*, the incoherence of ideas is scarcely greater than what is to be found in some admired passages of our fashionable poetry.

Nor is it merely by a difference of words, that the language of poetry is distinguished from that of prose. When a poetical *arrangement* of words has once been established by authors of reputation, the most common expressions, by being presented in this consecrated order, may serve to excite poetical associations.

On the other hand, nothing more completely destroys the charm of poetry, than a string of words which the custom of ordinary discourse has arranged in so invariable an order, that the whole phrase may be anticipated from hearing its commencement. A single word frequently strikes us as flat and prosaic, in consequence of its familiarity; but two such words coupled together in the order of conversation, can scarcely be introduced into serious poetry without appearing ludicrous.

No poet in our language has shown so strikingly as Milton, the wonderful elevation which style may derive from an arrangement of words, which, while it is perfectly intelligible, departs widely from that to which we are in general accustomed. Many of his most sublime periods, when the order of the words is altered, are reduced nearly to the level of prose.

To copy this artifice with success is a much more difficult attainment than is commonly imagined; and, of consequence, when it is acquired, it secures an author, to a great degree, from that crowd of imitators who spoil the effect of whatever is not beyond their reach. To the poet who uses blank verse, it is an acquisition of still more essential consequence than to him who expresses himself in rhyme; for the more that the structure of the verse approaches to prose, the more it is necessary to give novelty and dignity to the composition. And accordingly, among our magazine poets, ten thousand catch the structure of Pope's versification, for one who approaches to the manner of Milton, or of Thompson.

The facility, however, of this imitation, like every other, increases with the number of those who have studied it with success; for the more numerous the authors who have employed their genius in any one direction, the more copious are the materials out of which mediocrity may select and combine, so as to escape the charge of plagiarism. And, in fact, in our own language, this, as well as the other great resource of poetical expression, the employment of appropriated words, has had its effect so much impaired by the abuse which has been made of it, that a few of our best poets of late have endeavoured to strike out a new path for themselves, by resting the elevation for their composition chiefly on a singular, and, to an ordinary writer, an unattainable union of harmonious versification, with a natural arrangement of words, and a simple elegance of expression. It is this union, which seems to form the distinguishing charm of the poetry of Goldsmith.

From the remarks which have been made on the influence of the association of ideas on our judgments in matters of taste, it is obvious how much the opinions of a nation with respect to merit in the fine arts, are likely to be influenced by the form of their government, and the state of their manners. Voltaire, in his discourse pronounced at his reception into the French academy, gives several reasons why the poets of that country have not succeeded in describing rural scenes and employments. The principal one is, the ideas of meanness, and poverty, and wretchedness, which the French are accustomed to associate with the profession of husbandry. The same thing is alluded to by the Abbé de Lille, in the preliminary discourse prefixed to his translation of the Georgics. "A translation," says he, "of this poem, if it had been undertaken by an author of genius, would have been better calculated than any other work, for adding to the riches of our language. A version of the Æneid itself, however well executed, would, in this respect, be of less utility; inasmuch as the genius of our tongue accommodates itself more easily to the description of heroic achievements, than to the details of natural phenomena, and of the operations of husbandry. To force it to express these with suitable dignity, would have been a real conquest over that false delicacy, which it has contracted from our unfortunate prejudices."

How different must have been the emotions with which this divine performance of Virgil was read by an ancient Roman, while he recollected that period in the history of his country, when dictators were called from the plough to the defence of the state, and after having led monarchs in triumph, returned again to the same happy and independent occupation. A state of manners to which a Roman author of a later age looked back with such enthusiasm, that he ascribes, by a bold poetical figure, the flourishing state of agriculture under the republic, to the grateful returns which the earth then made to the illustrious hands by which she was cultivated:—"Gaudente terrâ vomere laureato, et triumphali aratore."*

SECTION III.

Of the Influence of Association on our active Principles, and on our moral Judgments.

In order to illustrate a little farther, the influence of the Association of Ideas on the human mind, I shall add a few remarks on some of its effects on our active and moral principles. In stating these remarks, I shall endeavour to avoid, as much as possible, every occasion of controversy, by confining myself to such general views of the subject, as do not presuppose any particular enumeration of our original principles of action, or any particular system concerning the nature of the moral faculty. If my health and leisure enable me to carry my plans into execution, I propose, in the sequel of this work, to resume these inquiries, and to examine the various opinions to which they have given rise.

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* Plin. Nat. Hist. xviii. 4.

The manner in which the association of ideas operates in producing new principles of action, has been explained very distinctly by different writers. Whatever conduces to the gratification of any natural appetite, or of any natural desire, is itself desired on account of the end to which it is subservient; and by being thus habitually associated in our apprehension with agreeable objects, it frequently comes, in process of time, to be regarded as valuable in itself, independently of its utility. It is thus that wealth becomes, with many, an ultimate object of pursuit; although, at first, it is undoubtedly valued, merely on account of its subserviency to the attainment of other objects. In like manner, men are led to desire dress, equipage, retinue, furniture, on account of the estimation in which they are supposed to be held by the public. Such desires are called by Dr. Hutcheson* *secondary* desires: and their origin is explained by him in the way which I have mentioned. "Since we are capable," says he, "of reflection, memory, observation, and reasoning about the distant tendencies of objects and actions, and not confined to things present, there must arise, in consequence of our original desires, secondary desires of every thing imagined useful to gratify any of the primary desires; and that with strength proportioned to the several original desires, and imagined usefulness or necessity of the advantageous object." "Thus," he continues, "as soon as we come to apprehend the use of wealth or power to gratify any of our original desires, we must also desire them; and hence arises the universality of these desires of wealth and power, since they are the means of gratifying all other desires." The only thing that appears to me exceptionable in the foregoing passage is, that the author classes the desire of power with that of wealth; whereas I apprehend it to be clear, (for reasons which I shall state in another part of this work,) that the former is a primary desire, and the latter a secondary one.

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* See his Essay on the Nature and Conduct of the Passions.

Our moral judgments, too, may be modified, and even perverted, to a certain degree, in consequence of the operation of the same principle. In the same manner in which a person who is regarded as a model of taste may introduce, by his example, an absurd or fantastical dress; so a man of splendid virtues may attract some esteem also to his imperfections, and, if placed in a conspicuous situation, may render his vices and follies objects of general imitation among the multitude.

"In the reign of Charles the Second," says Mr. Smith,* "a degree of licentiousness was deemed the characteristic of a liberal education. It was connected, according to the notions of those times, with generosity, sincerity, magnanimity, loyalty; and proved that the person who acted in this manner, was a gentleman, and not a puritan. Severity of manners, and regularity of conduct, on the other hand, were altogether unfashionable, and were connected, in the imagination of that age, with cant, cunning, hypocrisy, and low manners. To superficial minds, the vices of the great seem at all times agreeable. They connect them, not only with the splendor of fortune, but with many superior virtues which they ascribe to their superiors; with the spirit of freedom and independency; with frankness, generosity, humanity, and politeness. The virtues of the inferior ranks of people, on the contrary, their parsimonious frugality, their painful industry, and rigid adherence to rules, seem to them mean and disagreeable. They connect them both with the meanness of the station to which these qualities commonly belong, and with many great vices which they suppose usually accompany them; such as an abject, cowardly, ill-natured, lying, pilfering disposition."

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* Theory of Moral Sentiments.

The theory which, in the foregoing passages from Hutcheson and Smith, is employed so justly and philosophically to explain the origin of our secondary desires, and to account for some perversions of our moral judgments, has been thought sufficient, by some later writers, to account for the origin of all our active principles without exception. The first of these attempts to extend so very far the application of the doctrine of Association was made by the Rev. Mr. Gay, in a dissertation "concerning the fundamental Principle of Virtue," which is prefixed by Dr. Law to his translation of Archbishop King's Essay "On the Origin of Evil." In this dissertation, the author endeavours to show, "that our approbation of morality, and all affections whatsoever, are finally resolvable into reason, pointing out private happiness, and are conversant only about things apprehended to be means tending to this end; and that wherever this end is not perceived, they are to be accounted for from the association of ideas, and may properly be called *habits*." The same principles have been since pushed to a much greater length by Dr. Hartley, whose system (as he himself informs us) took rise from his accidentally hearing it mentioned as an opinion of Mr. Gay, "that the association of ideas was sufficient to account for all our intellectual pleasures and pains."*

It must, I think, in justice, be acknowledged, that this theory, concerning the origin of our affections, and of the moral sense, is a most ingenious refinement upon the selfish system as it was formerly taught; and that, by means of it, the force of many of the common reasonings against that system is eluded. Among these reasonings, particular stress has always been laid on the instantaneousness with which our affections operate, and the moral sense approves or condemns, and on our total want of consciousness, in such cases, of any reference to our own happiness. The modern advocates for the selfish system admit the fact to be as it is stated by their opponents; and grant, that after the moral sense and our various affections are formed, their exercise, in particular cases, may become completely disinterested; but still they contend, that it is upon a regard to our own happiness that all these principles are originally grafted. The analogy of avarice will serve to illustrate the scope of this theory. It cannot be doubted that this principle of action is artificial. It is on account of the enjoyments which it enables us to purchase, that money is originally desired; and yet, in process of time, by means of the agreeable impressions which are associated with it, it comes to be desired for its own sake; and even continues to be an object of our pursuit, long after we have lost all relish for those enjoyments which it enables us to command.

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* Mr. Hume too, who, in my opinion, has carried this principle of the Association of Ideas a great deal too far, has compared the universality of its applications in the philosophy of mind, to that of the principle of attraction in physics. "Here," says he, "is a kind of attraction, which in the mental world will be found to have as extraordinary effects as in the natural, and to show itself in as many and as various forms." *Treat. of Hum. Nat.* vol. i. p. 30.

Without meaning to engage in any controversy on the subject, I shall content myself with observing, in general, that there must be some limit, beyond which the theory of association cannot possibly be carried; for the explanation which it gives of the formation of new principles of action, proceeds on the supposition that there are other principles previously existing in the mind. The great question then is, when we are arrived at this limit; or, in other words, when we are arrived at the simple and original laws of our constitution.

In conducting this inquiry, philosophers have been apt to go into extremes. Lord Kaimes, and some other authors, have been censured, and perhaps justly, for a disposition to multiply original principles to an unnecessary degree. It may be questioned, whether Dr. Hartley, and his followers, have not sometimes been misled by too eager a desire of abridging their number.

Of these two errors, the former is the least common, and the least dangerous. It is the least common, because it is not so flattering as the other to the vanity of a theorist; and it is the least dangerous, because it has no tendency, like the other, to give rise to a suppression, or to a misrepresentation of facts; or to retard the progress of the science, by bestowing upon it an appearance of systematical perfection, to which, in its present state, it is not entitled.

Abstracting, however, from these inconveniences, which must always result from a precipitate reference of phenomena to general principles, it does not seem to me, that the theory in question has any tendency to weaken the foundation of morals. It has, indeed, some tendency, in common with the philosophy of Hobbes and of Mandeville, to degrade the dignity of human nature; but it leads to no skeptical conclusions concerning the rule of life. For, although we were to grant, that all our principles of action are acquired; so striking a difference among them must still be admitted, as is sufficient to distinguish clearly those universal laws which were intended to regulate human conduct, from the local habits which are formed by education and fashion. It must still be admitted, that while some active principles are confined to particular individuals, or to particular tribes of men, there are others, which, arising from circumstances in which all the situations of mankind must agree, are common to the whole species. Such active principles as fall under this last description, at whatever period of life they may appear, are to be regarded as a part of human nature, no less than the instinct of suction; in the same manner as the acquired perception of distance by the eye, is to be ranked among the perceptive powers of man, no less than the original perceptions of any of our other senses.

Leaving, therefore, the question concerning the origin of our active principles, and of the moral faculty, to be the subject of future discussion, I shall conclude this section with a few remarks of a more practical nature.

It has been shown by different writers, how much of the beauty and sublimity of material objects arises from the ideas and feelings which we have been taught to associate with them. The impression produced on the external senses of a poet, by the most striking scene in nature, is precisely the same with what is produced on the senses of a peasant or a tradesman: yet how different is the degree of pleasure resulting from this impression! A great part of this difference is undoubtedly to be ascribed to the ideas and feelings which the habitual studies and amusements of the poet have associated with his organical perceptions.

A similar observation may be applied to all the various objects of our pursuit in life. Hardly any one of them is appreciated by any two men in the same manner; and frequently what one man considers as essential to his happiness, is regarded with indifference or dislike by another. Of these differences of opinion, much is, no doubt, to be ascribed to a diversity of constitution, which renders a particular employment of the intellectual or active powers agreeable to one man, which is not equally so to another. But much is also to be ascribed to the effect of association; which, prior to any experience of human life, connects pleasing ideas and pleasing feelings with different objects, in the minds of different persons.

In consequence of these associations, every man appears to his neighbour to pursue the object of his wishes, with a zeal disproportioned to its intrinsic value; and the philosopher (whose principal enjoyment arises from speculation) is frequently apt to smile at the ardor with which the active part of mankind pursue what appear to him to be mere shadows. This view of human affairs, some writers have carried so far, as to represent life as a scene of mere illusions, where the mind refers to the objects around it a coloring which exists only in itself; and where, as the Poet expresses it,

> ——— " Opinion gilds with varying rays
> Those painted clouds which beautify our days."

It may be questioned, if these representations of human life be useful or just. That the casual associations which the mind forms in childhood, and in early youth, are frequently a source of inconvenience and of misconduct, is sufficiently obvious; but that this tendency of our nature increases, on the whole, the sum of human enjoyment, appears to me to be indisputable; and the instances in which it misleads us from our duty and our happiness only prove to what important ends it might be subservient, if it were kept under proper regulation.

Nor does these representations of life (admitting them in their full extent) justify the practical inferences which have been often deduced from them, with respect to the vanity of our pursuits. In every case, indeed, in which our enjoyment depends upon association, it may be said, in one sense, that it arises from the mind itself; but it does not therefore follow, that the external object which custom has rendered the cause or the occasion of agreeable emotions, is indifferent to our happiness. The effect which the beauties of nature produce on the mind of the poet, is wonderfully heightened by association, but his enjoyment is not, on that account, the less exquisite: nor are the objects of his admiration of the less value to his happiness, that they derive their principal charms from the embellishments of his fancy.

It is the business of education, not to counteract, in any instance, the established laws of our constitution, but to direct them to their proper purposes. That the influence of early associations on the mind might be employed, in the most effectual manner, to aid our moral principles, appears evidently from the effects which we daily see it produce, in reconciling men to a course of action which their reason forces them to condemn; and it is no less obvious that, by means of it, the happiness of human life might be increased, and its pains diminished, if the agreeable ideas and feelings which children are so apt to connect with events and with situations which depend on the caprice of fortune, were firmly associated in their apprehensions with the duties of their stations, with the pursuits of science, and with those beauties of nature which are open to all.

These observations coincide nearly with the ancient stoical doctrine concerning the influence of *imagination** on mortals; a subject, on which many important remarks, (though expressed in a form different from that which modern philosophers have introduced, and, perhaps, not altogether so precise and accurate,) are to be found in the Discourses of Epictetus, and in the Meditations of Antoninus.* This doctrine of the Stoical school, Dr. Akenside has in view in the following passage:

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* According to the use which I make of the words *imagination* and *association* in this work, their effects are obviously distinguishable. I have thought it proper however, to illustrate the difference between them a little more fully in Note (R.)

——— "Action treads the path
In which Opinion says he follows good,
Or flies from evil; and Opinion gives
Report of good or evil, as the scene
Was drawn by Fancy, lovely or deform'd:
Thus her report can never there be true,
Where Fancy cheats the intellectual eye
With glaring colors and distorted lines.
Is there a man, who at the sound of death
Sees ghastly shapes of terror conjur'd up,
And black before him; nought but death-bed groans
And fearful prayers, and plunging from the brink
Of light and being, down the gloomy air,
An unknown depth? Alas! in such a mind,
If no bright forms of excellence attend
The image of his country; nor the pomp
Of sacred senates, nor the guardian voice
Of Justice on her throne, nor aught that wakes
The conscious bosom with a patriot's flame;
Will not Opinion tell him, that to die,
Or stand the hazard, is a greater ill
Than to betray his country? And in act
Will he not choose to be a wretch and live?
Here vice begins then." †

SECTION IV.

General Remarks on the Subjects treated in the foregoing Sections of this Chapter.

In perusing the foregoing Sections of this Chapter, I am aware, that some of my readers may be apt to think that many of the observations which I have made, might easily be resolved into more general principles. I am also aware, that, to the followers of Dr. Hartley, a similar objection will occur against all the other parts of this work; and that it will appear to them the effect of inexcusable prejudice, that I should stop short so frequently in the explanation of phenomena; when he has accounted in so satisfactory a manner, by means of the association of ideas, for all the appearances which human nature exhibits.

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* See what Epictetus has remarked on the χρησις οἵα δεῖ φαντασίων. (Arrian, l. i. c. 12.) Οἷα ἂν πολλάκις φαντασθῇς, τοιαύτη σοὶ ἔσται ἡ διάνοια. Βάπτεται γὰρ ὑπὸ τῶν φαντασιῶν ἡ ψυχή. Βάπτε οὖν αὐτὴν, τῇ συνεχείᾳ τῶν τοιούτων φαντασιῶν, &c. &c. Anton. l. v. c. 11.

† Pleasures of Imagination, b. iii.

To this objection, I shall not feel myself much interested to reply, provided it be granted that my observations are candidly and accurately stated, so far as they reach. Supposing that in some cases I may have stopped short too soon, my speculations, although they may be censured as imperfect, cannot be considered as standing in opposition to the conclusions of more successful inquirers.

May I be allowed farther to observe, that such views of the human mind as are contained in this work, (even supposing the objection to be well founded,) are, in my opinion, indispensably necessary, in order to prepare the way for those very general and comprehensive theories concerning it, which some eminent writers of the present age have been ambitious to form?

Concerning the merit of these theories, I shall not presume to give any judgment. I shall only remark, that, in all the other sciences, the progress of discovery has been gradual, from the less general to the more general laws of nature; and that it would be singular, indeed, if, in the Philosophy of the Human Mind, a science, which but a few years ago was confessedly in its infancy, and which certainly labors under many disadvantages peculiar to itself, a step should, all at once, be made to a single principle comprehending all the particular phenomena which we know.

Supposing such a theory to be completely established, it would still be proper to lead the minds of students to it by gradual steps. One of the most important uses of theory, is to give the memory a permanent hold, and a prompt command, of the particular facts which we were previously acquainted with; and no theory can be completely understood, unless the mind be led to it nearly in the order of investigation.

It is more particularly useful, in conducting the studies of others, to familiarize their minds, as completely as possible, with those laws of nature for which we have the direct evidence of sense, or of consciousness, before directing their inquiries to the more abstruse and refined generalizations of speculative curiosity. In natural philosophy, supposing the theory of Boscovich to be true, it would still be proper, or rather indeed absolutely necessary, to accustom students, in the first stage of their physical education, to dwell on those general physical facts which fall under our actual observation, and about which all the practical arts of life are conversant. In like manner, in the philosophy of mind, there are many general facts for which we have the direct evidence of consciousness. The words *attention*, *conception*, *memory*, *abstraction*, *imagination*, *curiosity*, *ambition*, *compassion*, *resentment*, express powers and principles of our nature, which every man may study by reflecting on his own internal operations. Words corresponding to these, are to be found in all languages, and may be considered as forming the first attempt towards a philosophical classification of intellectual and moral phenomena. Such a classification, however imperfect and indistinct, we may be assured, must have some foundation in nature; and it is at least prudent, for a philosopher to keep it in view as the ground-work of his own arrangement. It not only directs our attention to those facts in the human constitution, on which every solid theory in this branch of science must be founded; but to the facts, which, in all ages, have appeared to the common sense of mankind, to be the most striking and important; and of which it ought to be the great object of theorists, not to supersede, but to facilitate the study.

There is indeed good reason for believing, that many of the facts, which our consciousness would lead us to consider, upon a superficial view, as ultimate facts, are resolvable into other principles still more general. "Long before we are capable of reflection," says Dr. Reid, "the original perceptions and notions of the mind are so mixed, compounded, and decompounded, by habits, associations, and abstractions, that it is extremely difficult for the mind to return upon its own footsteps, and trace back those operations which have employed it since it first began to think and to act." The same author remarks, that, "if we could obtain a distinct and full history of all that hath passed in the mind of a child, from the beginning of life and sensation, till it grows up to the use of reason; how its infant faculties began to work, and how they brought forth and ripened all the various notions, opinions, and sentiments, which we find in ourselves when we come to be capable of reflection; this would be a treasure of Natural History, which would probably give more light into the human faculties, than all the systems of philosophers about them, since the beginning of the world." To accomplish an analysis of these complicated phenomena into the simple and original principles of our constitution, is the great object of this branch of philosophy; but, in order to succeed, it is necessary to ascertain facts before we begin to reason, and to avoid generalizing, in any instance, till we have completely secured the ground that we have gained. Such a caution, which is necessary in all the sciences, is, in a more peculiar manner, necessary here, where the very facts from which all our inferences must be drawn, are to be ascertained only by the most patient attention; and, where almost all of them are, to a great degree, disguised, partly by the inaccuracies of popular language, and partly by the mistaken theories of philosophers.

I have only to add, that, although I have retained the phrase of the *association of ideas*, in compliance with common language, I am far from being completely satisfied with this mode of expression. I have retained it, chiefly that I might not expose myself to the censure of delivering old doctrines in a new form.

As I have endeavoured to employ it with caution, I hope that it has not often misled me in my reasonings. At the same time, I am more and more convinced of the advantages to be derived from a reformation of the common language, in most of the branches of science. How much such a reformation has effected in Chemistry is well known; and it is evidently much more necessary in the Philosophy of Mind, where the prevailing language adds to the common inaccuracies of popular expressions, the peculiar disadvantage of being all suggested by the analogy of matter. Often, in the composition of this work, have I recollected the advice of Bergman to Morveau: * "In reforming the nomenclature of chemistry, spare no word which is improper. They who understand the subject already, will suffer no inconvenience; and they to whom the subject is new, will comprehend it with the greater facility." But it belongs to such authors alone, as have extended the boundaries of science by their own discoveries, to introduce innovations in language with any hopes of success.

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* "Le savant Professeur d'Upsal M. Bergman écriveit à M. de Morveau dans les derniers temps de sa vie, Ne faites graces à aucune dénomination impropre. Ceux qui savent déja, entendront toujours; ceux qui ne savent pas encore, entendront plutôt." *Méthode de Nomenclat. Chémique, par MM.* MORVEAU, LAVOISIER, &c.

CHAPTER SIXTH.

OF MEMORY.

SECTION I.

General Observations on Memory.

AMONG the various powers of the understanding, there is none which has been so attentively examined by philosophers, or concerning which so many important facts and observations have been collected, as the faculty of Memory. This is partly to be ascribed to its nature, which renders it easily distinguishable from all the other principles of our constitution, even by those who have not been accustomed to metaphysical investigations, and partly to its immediate subserviency, not only to the pursuits of science, but to the ordinary business of life; in consequence of which, many of its most curious laws had been observed, long before any analysis was attempted of the other powers of the mind; and have for many ages, formed a part of the common maxims which are to be found in every treatise of education. Some important remarks on the subject may, in particular, be collected from the writings of the ancient rhetoricians.

The word *memory* is not employed uniformly in the same precise sense; but it always expresses some modification of that faculty, which enables us to treasure up and preserve for future use, the knowledge we acquire; a faculty which is obviously the great foundation of all intellectual improvement, and without which no advantage could be derived from the most enlarged experience. This faculty implies two things: a capacity of retaining knowledge; and a power of recalling it to our thoughts when we have occasion to apply it to use. The word *memory* is sometimes employed to express the capacity, and sometimes the power. When we speak of a retentive memory, we use it in the former sense; when of a ready memory, in the latter.

The various particulars which compose our stock of knowledge are, from time to time, recalled to our thoughts, in one of two ways; sometimes they recur to us spontaneously, or at least, without any interference on our part; in other cases they are recalled, in consequence of an effort of our will. For the former operation of the mind, we have no appropriated name in our language, distinct from Memory. The latter, too, is often called by the same name, but is more properly distinguished by the word *recollection*.

There are, I believe, some other acceptations besides these, in which the word *memory* has been occasionally employed; but as its ambiguities are not of such a nature as to mislead us in our present inquiries, I shall not dwell any longer on the illustration of distinctions, which to the greater part of readers might appear uninteresting and minute. One distinction only, relative to this subject, occurs to me, as deserving particular attention.

The operations of memory relate either to things and their relations, or to events. In the former case, thoughts which have been previously in the mind, may recur to us, without suggesting the idea of the past, or of any modification of time whatever; as when I repeat over a poem which I have got by heart, or when I think of the features of an absent friend. In this last instance, indeed, philosophers distinguish the act of the mind by the name of Conception; but in ordinary discourse, and frequently even in philosophical writing, it is considered as an exertion of Memory. In these and similar cases, it is obvious, that the operations of this faculty do not necessarily involve the idea of the past.

The case is different with respect to the memory of events. When I think of these, I not only recall to the mind the former objects of its thoughts, but I refer the event to a particular point of time; so that, of every such act of memory, the idea of the past is a necessary concomitant.

I have been led to take notice of this distinction, in order to obviate an objection which some of the phenomena of Memory seem to present, against a doctrine which I formerly stated, when treating of the powers of Conception and Imagination.

It is evident, that when I think of an event, in which any object of sense was concerned, my recollection of the event must necessarily involve an act of Conception. Thus, when I think of a dramatic representation which I have recently seen, my recollection of what I saw, necessarily involves a conception of the different actors by whom it was performed. But every act of recollection which relates to events, is accompanied with a belief of their past existence. How then are we to reconcile this conclusion with the doctrine formerly maintained concerning Conception, according to which every exertion of that power is accompanied with a belief, that its object exists before us at the present moment?

The only way that occurs to me of removing this difficulty, is by supposing that the remembrance of a past event is not a simple act of the mind; but that the mind first forms a conception of the event, and then judges from circumstances, of the period of time to which it is to be referred: a supposition which is by no means a gratuitous one, invented to answer a particular purpose, but which, as far as I am able to judge, is agreeable to fact: for if we have the power, as will not be disputed, of conceived a past event without any reference to time, it follows, that there is nothing in the ideas or notions which memory presents to us, which is necessarily accompanied with a belief of past existence, in a way analogous to that in which our perceptions are accompanied with a belief of the present existence of their objects; and therefore, that the reference of the event to the particular period at which it happened, is a judgment founded on concomitant circumstances. So long as we are occupied with the conception of any particular object connected with the event, we believe the present existence of the object; but this belief, which, in most cases, is only momentary, is instantly corrected by habits of judging acquired by experience; and as soon as the mind is disengaged from such a belief, it is left at liberty to refer the event to the period at which it actually happened. Nor will the apparent instantaneousness of such judgments be considered as an unsurmountable objection to the doctrine now advanced, by those who have reflected on the perception of distance obtained by sight, which, although it seems to be as immediate as any perception of touch, has been shown by philosophers to be the result of a judgment founded on experience and observation. The reference we make of past events to the particular points of time at which they took place, will, I am inclined to think, the more we consider the subject, be found the more strikingly analogous to the estimates of distance we learn to form by the eye.

Although, however, I am, myself, satisfied with the conclusion to which the foregoing reasonings lead, I am far from expecting that the case will be the same with all my readers. Some of their objections which I can easily anticipate, might, I believe, be obviated by a little farther discussion; but as the question is merely a matter of curiosity and has no necessary connexion with the observations I am to make in this Chapter, I shall not prosecute the subject at present. The opinion, indeed, we form concerning it, has no reference to any of the doctrines maintained in this work, excepting to a particular speculation concerning the belief accompanying conception, which I ventured to state, in treating of that subject, and which, as it appears to be extremely doubtful to some whose opinions I respect, I proposed with a degree of diffidence suitable to the difficulty of such an inquiry. The remaining observations which I am to make on the power of memory, whatever opinion may be formed of their importance, will furnish but little room for a diversity of judgment concerning their truth.

In considering this part of our constitution, one of the most obvious and striking questions that occurs, is, what the circumstances are which determine the memory to retain some things in preference to others? Among the subjects which successively occupy our thoughts, by far the greater number vanish, without leaving a trace behind them; while others become, as it were, a part of ourselves, and, by their accumulations, lay a foundation for our perpetual progress in knowledge. Without pretending to exhaust the subject, I shall content myself at present with a partial solution of this difficulty, by illustrating the dependence of memory upon two principles of our nature, with which it is plainly very intimately connected; attention, and the association of ideas.

I endeavoured in a former chapter to show, that there is a certain act of the mind, (distinguished, both by philosophers and the vulgar, by the name of *attention*,) without which even the objects of our perceptions make no impression on the memory. It is also matter of common remark, that the permanence of the impression which any thing leaves in the memory, is proportioned to the degree of attention which was originally given to it. The observation has been so often repeated, and is so manifestly true, that it is unnecessary to offer any illustration of it.*

I have only to observe farther, with respect to attention, considered in the relation in which it stands to memory, that although it be a voluntary act, it requires experience to have it always under command. In the case of objects to which we have been taught to attend at an early period of life, or which are calculated to rouse the curiosity, or to affect any of our passions, the attention fixes itself upon them, as it were spontaneously, and without any effort on our part, of which we are conscious. How perfectly do we remember, and even retain, for a long course of years, the faces and the handwritings of our acquaintances, although we never took any particular pains to fix them in the memory? On the other hand, if an object does not interest some principle of our nature, we may examine it again and again, with a wish to treasure up the knowledge of it in the mind, without our being able to command that degree of attention which may lead us to recognise it the next time we see it. A person, for example, who has not been accustomed to attend particularly to horses or to cattle, may study for a considerable time the appearance of a horse or of a bullock, without being able a few days afterwards to pronounce on his identity; while a horse-dealer or a grazier recollects many hundreds of that class of animals with which he is conversant, as perfectly as he does the faces of his acquaintances. In order to account for this, I would remark, that although attention be a voluntary act, and although we are always able, when we choose, to make a momentary exertion of it; yet, unless the object to which it is directed be really interesting, in some degree, to the curiosity, the train of our ideas goes on, and we immediately forget our purpose. When we are employed, therefore, in studying such an object, it is not an exclusive and steady attention that we give to it, but we are losing sight of it, and recurring to it every instant; and the painful efforts of which we are conscious, are not (as we are apt to suppose them to be) efforts of uncommon attention, but unsuccessful attempts to keep the mind steady to its object, and to exclude the extraneous ideas, which are from time to time soliciting its notice.

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* It seems to be owing to this dependence of memory on attention, that it is easier to get by heart a composition, after a very few readings, with an attempt to repeat it at the end of each, than after a hundred readings without such an effort. The effort rouses the attention from that languid state in which it remains, while the mind is giving a passive reception to foreign ideas. The fact is remarked by Lord Bacon, and is explained by him on the same principle to which I have referred it.

"Quæ expectantur et attentionem excitant, melius, hærent quam quæ prætervolant. Itaque si scriptum aliquod vicies perlegeris, non tam facile illud memoriter disces, quam si illud legas decies, tentando interim illud recitare, et ubi deficit memoria, inspiciendo librum." BACON, *Nov. Org.* lib. ii. aph. 26.

If these observations be well founded, they afford an explanation of a fact which has been often remarked, that objects are easily remembered which affect any of the passions.* The passion assists the memory, not in consequence of any immediate connexion between them, but as it presents, during the time it continues, a steady and exclusive object to the attention.

The connexion between memory and the association of ideas is so striking, that it has been supposed by some, that the whole of its phenomena might be resolved into this principle. But this is evidently not the case. The association of ideas connects our various thoughts with each other, so as to present them to the mind in a certain order, but it presupposes the existence of these thoughts in the mind; or, in other words, it presupposes a faculty of retaining the knowledge which we acquire. It involves also a power of recognising, as former objects of attention, the thoughts that from time to time occur to us; a power which is not implied in that law of our nature which is called the association of ideas. It is possible, surely, that our thoughts might have succeeded each other, according to the same laws as at present, without suggesting to us at all the idea of the past; and, in fact, this supposition is realized to a certain degree in the case of some old men, who retain pretty exactly the information which they receive, but are sometimes unable to recollect in what manner the particulars which they find connected together in their thoughts, at first came into the mind; whether they occurred to them in a dream, or were communicated to them in conversation.

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* "Si quas res in vitâ videmus parvas, usitatas, quotidianas, eas meminisse non solemus; propterea quod nullâ nisi novâ aut admirabili re commovetur animus. At si quid videmus aut audimus egregie turpe, aut honestum, inusitatum, magnum, incredibile, ridiculum, id diu meminisse consuevimus." *Ad H erenn.* lib 3.

On the other hand, it is evident, that without the associating principle, the powers of retaining our thoughts, and of recognising them when they occur to us, would have been of little use; for the most important articles of our knowledge might have remained latent in the mind, even when those occasions presented themselves to which they are immediately applicable. In consequence of this law of our nature, not only are all our various ideas made to pass, from time to time, in review before us, and to offer themselves to our choice as subjects of meditation, but when an occasion occurs which calls for the aid of our past experience, the occasion itself recalls to us all the information upon the subject which that experience has accumulated.

The foregoing observations comprehend an analysis of memory sufficiently accurate for my present purpose: some other remarks, tending to illustrate the same subject more completely, will occur in the remaining sections of this chapter.

It is hardly necessary for me to add, that when we have proceeded so far in our inquiries concerning Memory, as to obtain an analysis of that power, and to ascertain the relation in which it stands to the other principles of our constitution, we have advanced as far towards an explanation of it as the nature of the subject permits. The various theories which have attempted to account for it by traces or impressions in the sensorium, are obviously too unphilosophical to deserve a particular refutation.* Such, indeed, is the poverty of language, that we cannot speak on the subject without employing expressions which suggest one theory or another: but it is of importance for us always to recollect, that these expressions are entirely figurative, and afford no explanation of the phenomena to which they refer. It is partly with a view to remind my readers of this consideration, that, finding it impossible to lay aside completely metaphorical or analogical words, I have studied to avoid such an uniformity in the employment of them, as might indicate a preference to one theory rather than another; and by doing so, have perhaps sometimes been led to vary the metaphor oftener and more suddenly, than would be proper in a composition which aimed at any degree of elegance. This caution in the use of the common language concerning memory, it seemed to me the more necessary to attend to, that the general disposition which every person feels at the commencement of his philosophical pursuits, to explain the phenomena of thought by the laws of matter, is, in the case of this particular faculty, encouraged by a variety of peculiar circumstances. The analogy between committing a thing to memory that we wish to remember, and engraving on a tablet a fact that we wish to record, is so striking as to present itself even to the vulgar; nor is it perhaps less natural to indulge the fancy in considering memory as a sort of repository, in which we arrange and preserve for future use the materials of our information. The immediate dependence, too, of this faculty on the state of the body, which is more remarkable than that of any other faculty whatever, (as appears from the effects produced on it by old age, disease, and intoxication,) is apt to strike those who have not been much conversant with these inquiries, as bestowing some plausibility on the theory which attempts to explain its phenomena on mechanical principles.

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* See Note (S.)

I cannot help taking this opportunity of expressing a wish that medical writers would be at more pains than they have been at hitherto, to ascertain the various effects which are produced on the memory by disease and old age. These effects are widely diversified in different cases. In some it would seem that the memory is impaired in consequence of a diminution of the power of attention; in others, that the power of recollection is disturbed, in consequence of a derangement of that part of the constitution on which the association of ideas depends. The decay of memory which is the common effect of age, seems to arise from the former of these causes. It is probable, that, as we advance in years, the capacity of attention is weakened by some physical change in the constitution; but it is also reasonable to think, that it loses its vigor partly from the effect which the decay of our sensibility, and the extinction of our passions, have, in diminishing the interest which we feel in the common occurrences of life. That no derangement takes place, in ordinary cases, in that part of the constitution on which the association of ideas depends, appears from the distinct and circumstantial recollection which old men retain of the transactions of their youth.[*] In some diseases, this part of the constitution is evidently affected. A stroke of the palsy has been known, (while it did not destroy the power of speech,) to render the patient incapable of recollecting the names of the most familiar objects. What is still more remarkable, the name of an object has been known to suggest the idea of it as formerly, although the sight of the object ceased to suggest the name.

In so far as this decay of memory which old age brings along with it, is a necessary consequence of a physical change in the constitution, or a necessary consequence of a diminution of sensibility, it is the part of a wise man to submit cheerfully to the lot of his nature. But it is not unreasonable to think, that something may be done by our own efforts, to obviate the inconveniences which commonly result from it. If individuals, who, in the early part of life, have weak memories, are sometimes able to remedy this defect, by a greater attention to arrangement in their transactions, and to classification among their ideas, than is necessary to the bulk of mankind, might it not be possible, in the same way, to ward off, at least to a certain degree, the encroachments which time makes on this faculty? The few old men who continue in the active scenes of life to the last moment, it has been often remarked, complain, in general, much less of a want of recollection, than their cotemporaries. This is undoubtedly owing partly to the effect which the pursuits of business must necessarily have, in keeping alive the power of attention. But it is probably owing also to new habits of arrangement, which the mind gradually and insensibly forms, from the experience of its growing infirmities. The apparent revival of memory in old men, after a temporary decline, (which is a case that happens not unfrequently,) seems to favor this supposition.

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[*] Swift somewhere expresses his surprise, that old men should remember their anecdotes so distinctly, and should, notwithstanding, have so little memory as to tell the same story twice in the course of the same conversation; and a similar remark is made by Montaigne, in one of his Essays: "Surtout les Vieillards sont dangereux, à qui la souvenance des choses passées demeure, et ont perdu la souvenance de leurs redites."—Liv. i. cap. ix. (Des Menteurs.)

The fact seems to be, that all their old ideas remain in the mind, connected as formerly by the different associating principles; but that the power of attention to new ideas and new occurrences is impaired.

One old man, I have myself, had the good fortune to know, who, after a long, an active, and an honorable life, having begun to feel some of the usual effects of advanced years, has been able to find resources in his own sagacity, against most of the inconveniences with which they are commonly attended; and who, by watching his gradual decline with the cool eye of an indifferent observer, and employing his ingenuity to retard its progress, has converted even the infirmities of age into a source of philosophical amusement.

SECTION II.

Of the Varieties of Memory in different Individuals.

It is generally supposed, that, of all our faculties, Memory is that which nature has bestowed in the most unequal degrees on different individuals; and it is far from being impossible that this opinion may be well founded. If, however, we consider, that there is scarcely any man who has not memory sufficient to learn the use of language, and to learn to recognise, at the first glance, the appearances of an infinite number of familiar objects; besides acquiring such an acquaintance with the laws of nature, and the ordinary course of human affairs, as is necessary for directing his conduct in life; we shall be satisfied that the original disparities among men, in this respect, are by no means so immense as they seem to be at first view; and that much is to be ascribed to different habits of attention, and to a difference of selection among the various objects and events presented to their curiosity.

As the great purpose to which this faculty is subservient, is to enable us to collect, and to retain for the future regulation of our conduct, the results of our past experience; it is evident that the degree of perfection which it attains in the case of different persons, must vary; first, with the facility of making the original acquisition; secondly, with the permanence of the acquisition; and thirdly, with the quickness or readiness with which the individual is able, on particular occasions, to apply it to use. The qualities, therefore, of a good memory are, in the first place, to be susceptible; secondly, to be retentive; and thirdly, to be ready.

It is but rarely that these three qualities are united in the same person. We often, indeed, meet with a memory which is at once susceptible and ready; but I doubt much, if such memories be commonly very retentive: for, susceptibility and readiness are both connected with a facility of associating ideas, according to their more obvious relations; whereas retentiveness, or tenaciouness of memory, depends principally on what is seldom united with this facility, a disposition to system and to philosophical arrangement. These observations it will be necessary to illustrate more particularly.

I have already remarked, in treating of a different subject, that the bulk of mankind, being but little accustomed to reflect and to generalize, associate their ideas chiefly according to their more obvious relations; those, for example, of resemblance and of analogy; and above all, according to the casual relations arising from contiguity in time and place: whereas, in the mind of a philosopher, ideas are commonly associated according to those relations which are brought to light in consequence of particular efforts of attention; such as the relations of Cause and Effect, or of Premises and Conclusion. This difference in the modes of association of these two classes of men, is the foundation of some very striking diversities between them in respect of intellectual character.

In the first place in consequence of the nature of the relations which connect ideas together in the mind of the philosopher, it must necessarily happen, that when he has occasion to apply to use his acquired knowledge, time and reflection will be requisite to enable him to recollect it. In the case of those on the other hand, who have not been accustomed to scientific pursuits; as their ideas are connected together according to the most obvious relations; when any one idea of a class is presented to the mind, it is immediately followed by the others, which succeed each other spontaneously according to the laws of association. In managing, therefore, the little details of some subaltern employment, in which all that is required is a knowledge of forms, and a disposition to observe them, the want of a systematical genius is an important advantage; because this want renders the mind peculiarly susceptible of habits, and allows the train of its ideas to accommodate itself perfectly to the daily and hourly occurrences of its situation. But if, in this respect, men of no general principles have an advantage over the philosopher, they fall greatly below him in another point of view; inasmuch as all the information which they possess, must necessarily be limited by their own proper experience, whereas the philosopher, who is accustomed to refer every thing to general principles, is not only enabled, by means of these, to arrange the facts which experience has taught him, but by reasoning from his principles synthetically, has it often in his power to determine facts *a priori*, which he has no opportunity of ascertaining by observation.

It follows, farther, from the foregoing principles, that the intellectual defects of the philosopher are of a much more corrigible nature, than those of the mere man of detail. If the former is thrown by accident into a scene of business, more time will perhaps be necessary to qualify him for it, than would be requisite for the generality of mankind; but time and experience will infallibly, sooner or later, familiarize his mind completely with his situation. A capacity for system and for philosophical arrangement, unless it has been carefully cultivated in early life, is an acquisition which can scarcely ever be made afterwards; and, therefore, the defects which I already mentioned, as connected with early and constant habits of business, adopted from imitation, and undirected by theory, may, when once these habits are confirmed, be pronounced to be incurable.

I am also inclined to believe, both from a theoretical view of the subject, and from my own observations as far as they have reached, that if we wish to fix the particulars of our knowledge very permanently in the memory, the most effectual way of doing it, is to refer them to general principles. Ideas which are connected together merely by casual relations, present themselves with readiness to the mind, so long as we are forced by the habits of our situation to apply them to daily use; but when a change of circumstances leads us to vary the objects of our attention, we find our old ideas gradually to escape from the recollection: and if it should happen that they escape from it altogether, the only method of recovering them, is by renewing those studies by which they were at first acquired. The case is very different with a man whose ideas, presented to him at first by accident, have been afterwards philosophically arranged and referred to general principles. When he wishes to recollect them, some time and reflection will, frequently, be necessary to enable him to do so; but the information which he has once completely acquired, continues, in general, to be an acquisition for life; or if, accidentally, any article of it should be lost, it may often be recovered by a process of reasoning.

Something very similar to this happens in the study of languages. A person who acquires a foreign language merely by the ear, and without any knowledge of its principles, commonly speaks it while he remains in the country where it is spoken, with more readiness and fluency, than one who has studied it grammatically; but in the course of a few years absence, he finds himself almost as ignorant of it as before he acquired it. A language of which we once understand the principles thoroughly, it is hardly possible to lose by disuse.

A philosophical arrangement of our ideas is attended with another very important advantage. In a mind where the prevailing principles of association are founded on casual relations among the various objects of its knowledge, the thoughts must necessarily succeed each other in a very irregular and disorderly manner, and the occasions on which they present themselves, will be determined merely by accident. They will often occur, when they cannot be employed to any purpose; and will remain concealed from our view when the recollection of them might be useful. They cannot therefore be considered as under our own proper command. But in the case of a philosopher, how slow soever he may be in the recollection of his ideas, he knows always where he is to search for them, so as to bring them all to bear on their proper object. When he wishes to avail himself of his past experience, or of his former conclusions, the occasion, itself, summons up every thought in his mind which the occasion requires. Or if he is called upon to exert his powers of invention, and of discovery, the materials of both are always at hand, and are presented to his view with such a degree of connexion and arrangement, as may enable him to trace, with ease, their various relations. How much invention depends upon a patient and attentive examination of our ideas, in order to discover the less obvious relations which subsist among them, I had occasion to show at some length, in a former Chapter.

The remarks which have been now made, are sufficient to illustrate the advantages which the philosopher derives in the pursuits of science, from that sort of systematical memory which his habits of arrangement give him. It may however be doubted, whether such habits be equally favorable to a talent for agreeable conversation, at least, for that lively, varied, and unstudied conversation, which forms the principal charm of a promiscuous society. The conversation which pleases generally, must unite the recommendations of quickness, of ease, and of variety: and in all these three respects, that of the philosopher is apt to be deficient. It is deficient in quickness, because his ideas are connected by relations which occur only to an attentive and collected mind. It is deficient in ease, because these relations are not the casual and obvious ones, by which ideas are associated in ordinary memories, but the slow discoveries of patient, and often painful, exertion. As the ideas, too, which he associates together, are commonly of the same class, or at least are referred to the same general principles, he is in danger of becoming tedious, by indulging himself in long and systematical discourses; while another, possessed of the most inferior accomplishments, by laying his mind completely open to impressions from without, and by accommodating continually the course of his own ideas, not only to the ideas which are started by his companions, but to every trifling and unexpected accident that may occur to give them a new direction, is the life and soul of every society into which he enters. Even the anecdotes which the philosopher has collected, however agreeable they may be in themselves, are seldom introduced by him into conversation with that unstudied but happy propriety, which we admire in men of the world, whose facts are not referred to general principles, but are suggested to their recollection by the familiar topics and occurrences of ordinary life. Nor is it the imputation of tediousness merely, to which the systematical thinker must submit from common observers. It is but rarely possible to explain completely, in a promiscuous society, all the various parts of the most simple theory; and as nothing appears weaker or more absurd than a theory which is partially stated, it frequently happens, that men of ingenuity, by attempting it, sink, in the vulgar apprehension, below the level of ordinary understandings. "Theoriarum vires," says Lord Bacon, "in aptâ et se mutuo sustinente partium harmoniâ et quâdam in orbem demonstratione consistunt, ideoque per partes traditæ infirmæ sunt."

Before leaving the subject of Casual Memory, it may not be improper to add, that, how much soever it may disqualify for systematical speculation, there is a species of loose and rambling composition, to which it is peculiarly favorable. With such performances, it is often pleasant to unbend the mind in solitude, when we are more in the humor for conversation, than for connected thinking. Montaigne is unquestionably at the head of this class of authors. "What, indeed, are his Essays," to adopt his own account of them, "but grotesque pieces of patch-work, put together without any certain figure; or any order, connexion, or proportion, but what is accidental?"*

It is, however, curious, that in consequence of the predominance in his mind of this species of Memory above every other, he is forced to acknowledge his total want of that command over his ideas, which can only be founded on habits of systematical arrangement. As the passage is extremely characteristical of the author, and affords a striking confirmation of some of the preceding observations, I shall give it in his own words. "Je ne me tiens pas bien en ma possession et disposition : le hazard y a plus de droit que moy : l'occasion, la compagnie, le branle même de ma voix tire plus de mon esprit, que je n'y trouve lors que je sonde et employe à part moy. Ceci m'advient aussi, que je ne me trouveu pas ou je me cherche ; et me trouve plus par rencontre, que par l'inquisition de mon jugement." †

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* Liv. i. chap. 27. † Liv. i. chap. 10. (Du parier prompt ou tardif.)

The differences which I have now pointed out between philosophical and casual Memory, constitute the most remarkable of all the varieties which the minds of different individuals, considered in respect to this faculty, present to our observation. But there are other varieties of a less striking nature, the consideration of which may also suggest some useful reflections.

It was before remarked, that our ideas are frequently associated, in consequence of the associations which take place among their arbitrary signs. Indeed, in the case of all our general speculations, it is difficult to see in what other way our thoughts can be associated; for, I before endeavoured to show, that, without the use of signs of one kind or another, it would be impossible for us to make classes or genera, objects of our attention. All the signs by which our thoughts are expressed, are addressed either to the eye or to the ear; and the impressions made on these organs, at the time when we first receive an idea, contribute to give us a firmer hold of it. Visible objects (as I observed in the Chapter on Conception) are remembered more easily than those of any of our other senses; and hence it is, that the bulk of mankind are more aided in their recollection by the impressions made on the eye, than by those made on the ear. Every person must have remarked in studying the elements of geometry, how much his recollection of the theorems was aided by the diagrams which are connected with them: and I have little doubt, that the difficulty which students commonly find to remember the propositions of the fifth book of Euclid, arises chiefly from this, that the magnitudes to which they relate, are represented by straight lines, which do not make so strong an impression on the memory, as the figures which illustrate the propositions in the other five books.

This advantage which the objects of sight naturally have over those of hearing, in the distinctness and the permanence of the impressions which they make on the memory, continues, and even increases, through life, in the case of the bulk of mankind; because their minds, being but little addicted to general and abstract disquisition, are habitually occupied, either with the immediate perception of such objects, or with speculations in which the conception of them is more or less involved; which speculations, so far as they relate to individual things and individual events may be carried on with little or no assistance from language.

The case is different with the philosopher, whose habits of abstraction and generalization lay him continually under a necessity of employing words as an instrument of thought. Such habits co-operating with that inattention, which he is apt to contract to things external, must have an obvious tendency to weaken the original powers of recollection and conception with respect to visible objects; and at the same time, to strengthen the power of retaining propositions and reasonings expressed in language. The common system of education, too, by exercising the memory so much in the acquisition of grammar rules, and of passages from the ancient authors, contributes greatly, in the case of men of letters, to cultivate a capacity for retaining words.

It is surprising, of what a degree of culture our power of retaining a succession, even of insignificant sounds, is susceptible. Instances sometimes occur, of men who are easily able to commit to memory a long poem, composed in a language of which they are wholly ignorant; and I have, myself, known more than one instance of an individual, who, after having forgotten completely the classical studies of his childhood, was yet able to repeat, with fluency, long passages from Homer and Virgil, without annexing an idea to the words that he uttered.

This susceptibility of memory with respect to words, is possessed by all men in a very remarkable degree in their early years, and is, indeed, necessary to enable them to acquire the use of language; but unless it be carefully cultivated afterwards by constant exercise, it gradually decays as we advance to maturity. The plan of education which is followed in this country, however imperfect in many respects, falls in happily with this arrangement of nature, and stores the mind richly, even in infancy, with intellectual treasures, which are to remain with it through life. The rules of grammar, which comprehend systems, more or less perfect, of the principles of the dead languages, take a premanent hold of the memory, when the understanding is yet unable to comprehend their import; and the classical remains of antiquity, which, at the time we acquire them, do little more than furnish a gratification to the ear, supply us with inexhaustible sources of the most refined enjoyment; and, as our various powers gradually unfold themselves, are poured forth, without effort, from the memory, to delight the imagination, and to improve the heart. It cannot be doubted, that a great variety of other articles of useful knowledge, particularly with respect to geographical and chronological details, might be communicated with advantage to children, in the form of memorial lines. It is only in childhood, that such details can be learned with facility; and if they were once acquired, and rendered perfectly familiar to the mind, our riper years would be spared much of that painful and uninteresting labor, which is perpetually distracting our intellectual powers, from those more important exertions, for which, in their mature state, they seem to be destined.

This tendency of literary habits in general, and more particularly of philosophical pursuits, to exercise the thoughts about words, can scarcely fail to have some effect in weakening the powers of recollection and conception with respect to sensible objects; and, in fact, I believe it will be found, that whatever advantage the philosopher may possess over men of little education, in stating general propositions and general reasonings, he is commonly inferior to them in point of minuteness and accuracy when he attempts to describe any object which he has seen, or any event which he has witnessed: supposing the curiosity of both, in such cases, to be interested in an equal degree. I acknowledge, indeed, that the undivided attention, which men unaccustomed to reflection are able to give to the objects of their perceptions, is, in part, the cause of the liveliness and correctness of their conceptions.

With this diversity in the intellectual habits of cul vated and of uncultivated minds, there is another variety of memory which seems to have some connexion. In recognising visible objects, the memory of one man proceeds on the general appearance, that of another attaches itself to some minute and distinguishing marks. A peasant knows the various kinds of trees from their general habits; a botanist, from those characteristical circumstances on which his classification proceeds. The last kind of memory is, I think, most common among literary men, and arises from their habit of recollecting by means of words. It is evidently much easier to express by a description, a number of botanical marks, than the general habit of a tree; and the same remark is applicable to other cases of a similar nature. But to whatever cause we ascribe it, there can be no doubt of the fact, that many individuals are to be found, and chiefly among men of letters, who, although they have no memory for the general appearances of objects, are yet able to retain, with correctness, an immense number of technical discriminations.

Each of these kinds of memory has its peculiar advantages and inconveniences, which the dread of being tedious induces me to leave to the investigation of my readers.

SECTION III.

Of the Improvement of Memory.—Analysis of the Principles on which the Culture of Memory depends.

The improvement of which the mind is susceptible by culture, is more remarkable, perhaps, in the case of Memory, than in that of any other of our faculties. The fact has been often taken notice of in general terms; but I am doubtful if the particular mode in which culture operates on this part of our constitution, has been yet examined by philosophers with the attention which it deserves.

Of one sort of culture, indeed, of which Memory is susceptible in a very striking degree, no explanation can be given; I mean the improvement which the original faculty acquires by mere exercise; or, in other words, the tendency which practice has to increase our natural facility of association. This effect of practice upon the memory seems to be an ultimate law of our nature, or rather, to be a particular instance of that general law, that all our powers, both of body and mind, may be strengthened, by applying them to their proper purposes.

Besides, however, the improvement which memory admits of, in consequence of the effects of exercise on the original faculty, it may be greatly aided in its operations, by those expedients which reason and experience suggest for employing it to the best advantage. These expedients furnish a curious subject of philosophical examination: perhaps, too, the inquiry may not be altogether without use; for, although our principal resources for assisting the memory be suggested by nature, yet it is reasonable to think, that in this, as in similar cases, by following out systematically the hints which she suggests to us, a farther preparation may be made for our intellectual improvement.

Every person must have remarked; in entering upon any new species of study, the difficulty of treasuring up in the memory its elementary principles, and the growing facility which he acquires in this respect, as his knowledge becomes more extensive. By analyzing the different causes which concur in producing this facility, we may, perhaps, be led to some conclusions, which may admit of a practical application.

1. In every science, the ideas about which it is peculiarly conversant, are connected together by some particular associating principle; in one science, for example, by associations founded on the relation of cause and effect; in another, by associations founded on the necessary relations of mathematical truths; in a third, on associations founded on contiguity in place or time. Hence one cause of the gradual improvement of memory with respect to the familiar objects of our knowledge; for whatever be the prevailing associating principle among the ideas about which we are habitually occupied, it must necessarily acquire additional strength from our favorite study.

2. In proportion as a science becomes more familiar

to us, we acquire a greater command of attention with respect to the objects about which it is conversant; for the information which we already possess, gives us an interest in every new truth and every new fact which have any relation to it. In most cases, our habits of inattention may be traced to a want of curiosity; and therefore such habits are to be corrected, not by endeavouring to force the attention in particular instances, but by gradually learning to place the ideas which we wish to remember, in an interesting point of view.

3. When we first enter on any new literary pursuit, we are unable to make a proper discrimination in point of utility and importance, among the ideas which are presented to us; and by attempting to grasp at every thing, we fail in making those moderate acquisitions which are suited to the limited powers of the human mind. As our information extends, our selection becomes more judicious and more confined; and our knowledge of useful and connected truths advances rapidly, from our ceasing to distract the attention with such as are detached and insignificant.

4. Every object of our knowledge is related to a variety of others; and may be presented to the thoughts, sometimes by one principle of association, and sometimes by another. In proportion, therefore, to the multiplication of mutual relations among our ideas, (which is the natural result of growing information, and in particular, of habits of philosophical study,) the greater will be the number of occasions on which they will recur to the recollection, and the firmer will be the root which each idea, in particular, will take in the memory.

It follows, too, from this observation, that the facility of retaining a new fact, or a new idea, will depend on the number of relations which it bears to the former objects of our knowledge; and, on the other hand, that every such acquisition, so far from loading the memory, gives us a firmer hold of all that part of our previous information, with which it is in any degree connected.

It may not, perhaps, be improper to take this opportunity of observing, although the remark be not immediately connected with our present subject, that the accession made to the stock of our knowledge, by the new facts and ideas which we acquire, is not to be estimated merely by the number of these facts and ideas considered individually; but by the number of relations which they bear to one another, and to all the different particulars which were previously in the mind; for, "new knowledge," as Mr. Maclaurin has well remarked,* "does not consist so much in our having access to a new object, as in comparing it with others already known, observing its relations to them, or discerning what it has in common with them, and wherein their disparity consists: and, therefore, our knowledge is vastly greater than the sum of what all its objects separately could afford; and when a new object comes within our reach, the addition to our knowledge is the greater, the more we already know; so that it increases, not as the new objects increase, but in a much higher proportion."

5. In the last place, the natural powers of memory are, in the case of the philosopher, greatly aided by his peculiar habits of classification and arrangement. As this is by far the most important improvement of which memory is susceptible, I shall consider it more particularly than any of the others I have mentioned.

The advantages which the memory derives from a proper classification of our ideas, may be best conceived by attending to its effects, in enabling us to conduct, with ease, the common business of life. In what inextricable confusion would the lawyer or the merchant be immediately involved, if he were to deposit, in his cabinet, promiscuously, the various written documents which daily and hourly pass through his hands? Nor could this confusion be prevented by the natural powers of memory, however vigorous they might happen to be. By a proper distribution of these documents, and a judicious reference of them to a few general titles, a very ordinary memory is enabled to accomplish more than the most retentive, unassisted by method. We know, with certainty, where to find any article we may have occasion for, if it be in our possession; and the search is confined within reasonable limits, instead of being allowed to wander at random amidst a chaos of particulars.

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* See the Conclusion of his View of NEWTON's Discoveries.

Or, to take an instance still more immediately applicable to our purpose; suppose that a man of letters were to record, in a common-place book, without any method, all the various ideas and facts which occurred to him in the course of his studies; what difficulties would he perpetually experience in applying his acquisitions to use? and how completely and easily might these difficulties be obviated by referring the particulars of his information to certain general heads? It is obvious, too, that, by doing so, he would not only have his knowledge much more completely under his command, but as the particulars classed together would all have some connexion, more or less, with each other, he would be enabled to trace with advantage those mutual relations among his ideas, which it is the object of philosophy to ascertain.

A common-place book, conducted without any method, is an exact picture of the memory of a man whose inquiries are not directed by philosophy. And the advantages of order in treasuring up our ideas in the mind, are perfectly analogous to its effects when they are recorded in writing.

Nor is this all. In order to retain our knowledge distinctly and permanently, it is necessary that we should frequently recall it to our recollection. But how can this be done without the aid of arrangement? Or supposing that it were possible, how much time and labor would be necessary for bringing under our view the various particulars of which our information is composed? In proportion as it is properly systematized, this time and labor are abridged. The mind dwells habitually, not on detached facts, but on a comparatively small number of general principles; and, by means of these, it can summon up, as occasions may require, an infinite number of particulars associated with them; each of which, considered as a solitary truth, would have been as burthensome to the memory, as the general principle with which it is connected.

I would not wish it to be understood from these observations, that philosophy consists in classification alone, and that its only use is to assist the memory. I have often, indeed, heard this asserted in general terms; but it appears to me to be obvious, that although this be one of its most important uses, yet something more is necessary to complete the definition of it. Were the case otherwise, it would follow, that all classifications are equally philosophical, provided they are equally comprehensive. The very great importance of this subject will, I hope, be a sufficient apology for me, in taking this opportunity to correct some mistaken opinions which have been formed concerning it.

SECTION IV.

Continuation of the same Subject.—Aid which the Memory derives from Philosophical Arrangement.

It was before observed that the great use of the faculty of Memory, is to enable us to treasure up, for the future regulation of our conduct, the results of our past experience, and of our past reflections. But in every case in which we judge of the future from the past, we must proceed on the belief, that there is, in the course of events, a certain degree, at least, of uniformity. And, accordingly, this belief is not only justified by experience, but, as Dr. Reid has shown in a very satisfactory manner, it forms a part of the original constitution of the human mind. In the general laws of the material world, this uniformity is found to be complete; insomuch that, in the same combinations of circumstances, we expect, with the most perfect assurance, that the same results will take place. In the moral world, the course of events does not appear to be equally regular; but still it is regular, to so great a degree, as to afford us many rules of importance in the conduct of life.

A knowledge of Nature, in so far as it is absolutely necessary, for the preservation of our animal existence, is obtruded on us, without any reflection on our part, from our earliest infancy. It is thus that children learn of themselves to accommodate their conduct to the established laws of the material world. In doing so, they are guided merely by memory, and the instinctive principle of anticipation which has just been mentioned.

In forming conclusions concerning future events, the philosopher, as well as the infant, can only build with safety on past experience; and he, too, as well as the infant, proceeds on an instinctive belief, for which he is unable to account, of the uniformity of the laws of nature. There are, however, two important respects, which distinguish the knowledge he possesses from that of ordinary men. In the first place, it is far more extensive, in consequence of the assistance which science gives to his natural powers of invention and discovery. Secondly, it is not only more easily retained in the memory, and more conveniently applied to use, in consequence of the manner in which his ideas are arranged; but it enables him to ascertain, by a process of reasoning, all those truths which may be synthetically deduced from his general principles. The illustration of these particulars will lead to some useful remarks; and will at the same time show, that, in discussing the subject of this Section, I have not lost sight of the inquiry which occasioned it.

I. 1. It was already remarked, that the natural powers of Memory, together with that instinctive anticipation of the future from the past, which forms one of the original principles of the mind, are sufficient to enable infants, after a very short experience, to preserve their animal existence. The laws of nature, which it is not so important for us to know, and which are the objects of philosophical curiosity, are not so obviously exposed to our view, but are, in general, brought to light by means of experiments which are made for the purpose of discovery; or, in other words, by artificial combinations of circumstances, which we have no opportunity of seeing conjoined in the course of our ordinary experience. In this manner, it is evident, that many connexions may be ascertained, which would never have occurred spontaneously to our observation.

2. There are, too, some instances, particularly in the case of the astronomical phenomena, in which events, that appear to common observers to be altogether anom-

alous, are found, upon a more accurate and continued examination of them, to be subjected to a regular law. Such are those phenomena in the heavens, which we are able to predict by means of cycles. In the cases formerly described, our knowledge of nature is extended by placing her in new situations. In these cases, it is extended by continuing our observations beyond the limits of ordinary curiosity.

3. In the case of human affairs, as long as we confine our attention to particulars, we do not observe the same uniformity as in the phenomena of the material world. When, however, we extend our views to events which depend on a combination of different circumstances, such a degree of uniformity appears, as enables us to establish general rules, from which probable conjectures may often be formed with respect to futurity. It is thus, that we can pronounce, with much greater confidence, concerning the proportion of deaths which shall happen in a certain period among a given number of men, than we can predict the death of any individual; and that it is more reasonable to employ our sagacity, in speculating concerning the probable determinations of a numerous society, than concerning events which depend on the will of a single person.

In what manner this uniformity in events depending on contingent circumstances is produced, I shall not inquire at present. The advantages which we derive from it are obvious, as it enables us to collect, from our past experience, many general rules, both with respect to the history of political societies, and the characters and conduct of men in private life.

4. In the last place; the knowledge of the philosopher is more extensive than that of other men, in consequence of the attention which he gives, not merely to objects and events, but to the *relations* which different objects and different events bear to each other.

The observations and the experience of the vulgar are almost wholly limited to things perceived by the senses. A similarity between different objects, or between different events, rouses their curiosity, and leads them to classification and to general rules. But a similarity between different *relations*, is seldom to be traced without previous habits of philosophical inquiry. Many such similarities or connexions, however, are to be found in nature; and when once they are ascertained, they frequently lead to important discoveries; not only with respect to other relations, but with respect to the objects or to the events which are related. These remarks it will be necessary to illustrate more particularly.

The great object of geometry is to ascertain the relations which exist between different quantities, and the connexions which exist between different relations. When we demonstrate, that the angle at the centre of a circle is double of the angle at the circumference on the same base, we ascertain a relation between two quantities. When we demonstrate, that triangles of the same altitude are to each other as their bases, we ascertain a connexion between two relations. It is obvious, how much the mathematical sciences must contribute to enlarge our knowledge of the universe, in consequence of such discoveries. In that simplest of all processes of practical geometry, which teaches us to measure the height of an accessible tower, by comparing the length of its shadow with that of a staff fixed vertically in the ground, we proceed on the principle, that the relation between the shadow of the staff and the height of the staff is the same with the relation between the shadow of the tower and the height of the tower. But the former relation we can ascertain by actual measurement; and, of consequence, we not only obtain the other relation, but, as we can measure one of the related quantities, we obtain also the other quantity. In every case in which mathematics assists us in measuring the magnitudes or the distances of objects, it proceeds on the same principle; that is, it begins with ascertaining connexions among different relations, and thus enables us to carry our inquiries from facts which are exposed to the examination of our senses, to the most remote parts of the universe.

I observed also, that there are various relations existing among physical events, and various connexions existing among these relations. It is owing to this circumstance, that mathematics is so useful an instrument in the hands of the physical inquirer. In that beautiful theorem of Huygens, which demonstrates, that the time of a complete oscillation of a pendulum in the cycloid, is to the time in which a body would fall through the axis of the cycloid, as the circumference of a circle is to its diameter, we are made acquainted with a very curious and unexpected connexion between two relations; and the knowledge of this connexion facilitates the determination of a most important fact with respect to the descent of heavy bodies near the earth's surface, which could not be ascertained conveniently by a direct experiment.

In examining, with attention, the relations among different physical events, and the connexions among different relations, we sometimes are led by mere induction to the discovery of a general law; while, to ordinary observers, nothing appears but irregularity. From the writings of the earlier opticians we learn, that, in examining the first principles of dioptrics, they were led, by the analogy of the law of reflection, to search for the relation between the angles of incidence and refraction, (in the case of light passing from one medium into another,) in the angles themselves; and that some of them, finding this inquiry unsuccessful, took the trouble to determine, by experiments, (in the case of the media which most frequently fall under consideration,) the angle of refraction corresponding to every minute of incidence. Some very laborious tables, deduced from such experiments, are to be found in the works of Kircher. At length, Snellius discovered what is now called the law of refraction, which comprehends their whole contents in a single sentence.

The law of the planetary motions, deduced by Kepler from the observations of Tycho Brahe, is another striking illustration of the order, which an attentive inquirer is sometimes able to trace, among the relations of physical events, when the events themselves appear, on a superficial view, to be perfectly anomalous.

Such laws are, in some respects, analogous to t cycles which I have already mentioned; but they differ from them in this, that a cycle is, commonly, deduced from observations made on physical events which are obvious to the senses: whereas the laws we have now been considering, are deduced from an examination of relations which are known only to men of science. The most celebrated astronomical cycles, accordingly, are of a very remote antiquity, and were probably discovered at a period, when the study of astronomy consisted merely in accumulating and recording the more striking appearance of the heavens.

II. Having now endeavoured to show, how much philosophy contributes to extend our knowledge of facts, by aiding our natural powers of invention and discovery, I proceed to explain, in what manner it supersedes the necessity of studying particular truths, by putting us in possession of a comparatively small number of general principles in which they are involved.

I already remarked the assistance which philosophy gives to the memory, in consequence of the arrangement it introduces among our ideas. In this respect even a hypothetical theory may facilitate the recollection of facts, in the same manner, in which the memory is aided in remembering the objects of natural history by artificial classifications.

The advantages, however, we derive from true philosophy, are incomparably greater than what are to be expected from any hypothetical theories. These, indeed, may assist us in recollecting the particulars we are already acquainted with; but it is only from the laws of nature, which have been traced analytically from facts, that we can venture, with safety, to deduce consequences by reasoning *a priori*. An example will illustrate and confirm this observation.

Suppose that a glass tube, thirty inches long, is filled with mercury, excepting eight inches, and is inverted as in the Torricellian experiment, so that the eight inches of common air may rise to the top; and that I wish to know at what height the mercury will remain suspended in the tube, the barometer being at that time twenty-eight inches high. There is here a combination of different laws, which it is necessary to attend to, in order to be able to predict the result. 1. The air is a heavy fluid, and the pressure of the atmosphere is measured by the column of mercury in the barometer. 2. The air is an elastic fluid; and its elasticity at the earth's surface (as it resists the pressure of the atmosphere) is measured by the column of mercury in the barometer. 3. In different states, the elastic force of the air is reciprocally as the spaces which it occupies. But, in this experiment, the mercury which remains suspended in the tube, together with the elastic force of the air in the top of the tube, is a counterbalance to the pressure of the atmosphere; and therefore their joint effect must be equal to the pressure of a column of mercury twenty-eight inches high. Hence we obtain an algebraical equation, which affords an easy solution of the problem. It is further evident, that my knowledge of the physical laws which are here combined, puts it in my power to foretell the result, not only in this case, but in all the cases of a similar nature which can be supposed. The problem, in any particular instance, might be solved by making the experiment; but the result would be of no use to me, if the slightest alteration were made on the data.

It is in this manner that philosophy, by putting us in possession of a few general facts, enables us to determine, by reasoning, what will be the result of any supposed combination of them, and thus to comprehend an infinite variety of particulars, which no memory, however vigorous, would have been able to retain. In consequence of the knowledge of such general facts, the philosopher is relieved from the necessity of treasuring up in his mind all those truths, which are involved in his principles, and which may be deduced from them by reasoning; and he can often prosecute his discoveries synthetically, in those parts of the universe which he has no access to examine by immediate observation. There is, therefore, this important difference between the hypothetical theory, and a theory obtained by induction; that the latter not only enables us to remember the facts we already know, but to ascertain by reasoning, many facts which we have never had an opportunity of examining: whereas when we reason from a hypothesis *a priori*, we are almost certain of running into error; and, consequently, whatever may be its use to the memory, it can never be trusted to, in judging of cases which have not previously fallen within our experience.

There are some sciences, in which hypothetical theories are more useful than in others; those sciences, to wit, in which we have occasion for an extensive knowledge and a ready recollection of facts, and which, at the same time, are yet in too imperfect a state to allow us to obtain just theories by the method of induction. This is particularly the case in the science of medicine, in which we are under a necessity to apply our knowledge such as it is, to practice. It is also, in some degree, the case in agriculture. In the merely speculative parts of physics and chemistry, we may go on patiently accumulating facts, without forming any one conclusion, farther than our facts authorize us; and leave to posterity the credit of establishing the theory to which our labors are subservient. But in medicine, in which it is of consequence to have our knowledge at command, it seems reasonable to think, that hypothetical theories may be used with advantage; provided always, that they are considered merely in the light of artificial memories, and that the student is prepared to lay them aside, or to correct them, in proportion as his knowledge of nature becomes more extensive. I am, indeed, ready to confess, that this is a caution which it is more easy to give than to follow: for it is painful to change any of our habits of arrangement, and to relinquish those systems in which we have been educated, and which have long flattered us with an idea of our own wisdom. Dr. Gregory* mentions it as a striking and distinguishing circumstance in the character of Sydenham that, although full of hypothetical reasoning, it did not render him the less attentive to observation; and that his hypotheses seem to have sat so loosely about him, that either they did not influence his practice at all, or he could easily abandon them, whenever they would not bend to his experience.

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* Lectures on the Duties and Qualifications of a Physician.

cal creed may be, proceeds, in his researches, upon the maxim, that no organ exists without its appropriate destination; and although he may often fail in his attempts to ascertain what this destination is, he never carries his scepticism so far, as, for a moment, to doubt of the general principle. I am inclined to think, that it is in this way the most important steps in physiology have been gained; the curiosity being constantly kept alive by some new problem in the animal machine; and, at the same time, checked in its wanderings, by an irresistible conviction, that nothing is made in vain. The memorable account given by Mr. Boyle of the circumstances which led to the discovery of the circulation of the blood, is but one of the many testimonies which might be quoted in confirmation of this opinion.

"I remember, that when I asked our famous Harvey, in the only discourse I had with him, (which was but a little while before he died,) what were the things which induced him to think of a circulation of the blood? he answered me, that when he took notice, that the valves in the veins of so many parts of the body were so placed, that they gave free passage to the blood towards the heart, but opposed the passage of the venal blood the contrary way, he was invited to think, that so provident a cause as nature had not placed so many valves without design; and no design seemed more probable, than that, since the blood could not well, because of the interposing valves, be sent by the veins to the limbs, it should be sent through the arteries, and return through the veins whose valves did not oppose its course that way."[*]

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[*] Boyle's Works, Vol. IV. p. 539 Folio ed. See Outlines of Moral Philosophy, p. 185. (Edin. 1793.)

The reasoning here ascribed to Harvey seems now so very natural and obvious, that some have been disposed to question his claim to the high rank commonly assigned to him among the improvers of science. The late Dr. William Hunter has said that after the discovery of the valves in the veins, which Harvey learned, while in Italy, from his master Fabricius ab Aquapendente, the remaining step might easily have been made by any person of common abilities. "This discovery," he observes, "set Harvey to work upon the *use* of the heart and vascular system in animals: and in the course of some years, he was so happy as to discover, and to prove beyond all possibility of doubt, the circulation of the blood." He afterwards expresses his astonishment that this discovery should have been left for Harvey; adding, that "Providence meant to reserve it for *him*, and would not let men *see what was before them, nor understand what they read.*"—*Hunter's Introductory Lectures*, p. 42 *et seq.*

This perception of design and contrivance is more peculiarly impressive, when we contemplate those instances in the animal economy, in which the same effect is produced, in *different* combinations of circumstances, by *different* means:—when we compare, for example, the circulation of the blood in the fœtus, with that in the body of the animal after it is born. On such an occasion, how is it possible to withhold the assent from the ingenious reflection of Baxter! "Art and means are designedly multiplied, that we might not take it for the effects of chance; and, in some cases, the method itself is different, that we might see it is not the effect of surd necessity."*

Whatever opinion be formed on this point, Dr. Hunter's remarks are valuable, as an additional proof of the regard paid by anatomists to *Final Causes*, in the study of physiology.

See also Haller, Elem. Physiolog. Tom. I. p. 204.

* Inquiry into the Nature of the Human Soul, Vol. I. p. 136. (3d Ed.)

The following passage from an old English divine may be of use for the farther illustration of this argument. I quote it with the greater confidence, as I find that the most eminent and original physiologist of the present age (M. Cuvier) has been led, by his enlightened researches concerning the *laws of the animal* economy, into a train of thinking strikingly similar.

"Man is always mending and altering his works; but nature observes the same tenor, because her works are so perfect, that there is no place for amendments, nothing that can be reprehended. The most sagacious men in so many ages have not been able to find any flaw in these divinely contrived and formed machines; no blot or error in this great volume of the world, as if any thing had been an imperfect essay at the first; nothing that can be altered for the better; nothing but if it were altered would be marred. This could not have been, had man's body been the work of chance, and not counsel and providence. *Why should there be constantly the same parts? Why should they retain constantly the same places?* Nothing so contrary as constancy and chance. Should I see a man throw the same number a thousand times together upon but three dice, could you persuade me that this were accidental, and that there was no necessary cause for it? How much more incredible then is it, that constancy in such a variety, such a multiplicity of parts, should be the result of *chance? Neither yet* can these works be the effects of Necessity or Fate, for *then there would be the* same constancy observed in the smaller as well as in the larger parts and vessels; whereas *there* we see nature doth, as it were, sport itself, the minute ramifications of all the vessels, veins, arteries, and nerves, infinitely varying in individuals of the same species, so that they are not in any two alike."—*Ray's Wisdom of God in the Creation.*

"Nature," says Cuvier, "while confining herself strictly within those limits which the conditions necessary for existence prescribed to her, has yielded to her spontaneous fecundity wherever these conditions did not limit her operations; and without ever passing beyond the small number of combinations, that can be realized in the essential modifications of the important organs, she seems to have given full scope to her fancy, in filling up the subordinate parts. With respect to these, it is not inquired, whether an individual form, whether a particular arrangement be necessary; it seems often not to have been asked, whether it be even useful, in order to reduce it to practice; it is sufficient that it be possible, that it destroy not the harmony of the whole. Accordingly, as we recede from the principal organs, and approach to those of less importance, the varieties in structure and appearance become more numerous; and when we arrive at the

The study of comparative anatomy leads, at every step, so directly and so manifestly to the same conclusion, that even those physiologists who had nothing in view but the advancement of their own science, unanimously agree in recommending the dissection of animals of different kinds, as the most effectual of all helps for ascertaining the *functions* of the various organs in the human frame;—tacitly assuming as an incontrovertible truth, that, in proportion to the variety of means by which the same effect is accomplished, the presumption increases, that this effect was an *end* in the contemplation of the artist. "The intention of nature," says one author, "in the formation of the different parts, can no where be so well learned as from comparative anatomy; that is, if we would understand physiology, and reason on the functions of the animal economy, we must see how the same end is brought about in other species.—We must contemplate the part or organ in *different* animals; its shape, position, and connexion with the other parts; and observe what thence arises. If we find ONE COMMON EFFECT constantly produced, though in a very different way, we may safely conclude that this is the *use* or *function* of the part.—This reasoning can never betray us, if we are but sure of the facts."*

The celebrated Albinus expresses himself to the same purpose in his preface to Harvey's *Exercitatio de Motu Cordis.* "Incidenda autem animalia, quibus partes illæ quarum actiones quærimus eædem atque homini sunt, aut certe similes iis; ex quibus sine metu erroris judicare de illis hominis liceat. Quin et reliqua, si modo aliquam habeant ad hominem similitudinem, idonea sunt ad aliquod suppeditandum."

If Bacon had lived to read such testimonies as these in favor of the investigation of Final Causes; or had witnessed the discoveries to which it has led in the

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surface of the body, where the parts the least essential, and whose injuries are the least momentous, are necessarily placed, the number of varieties is so great, that the conjoined labors of naturalists have not yet been able to give us an adequate idea of them." *Leçons d'Anatomie Comparée.*

* Letter by an anonymous correspondent, prefixed to Monro's *Comparative Anatomy.* London, 1744.

study of the animal economy, he would, I doubt not, have readily admitted, that it was not altogether uninteresting and unprofitable, even to the *physical* inquirer. Such, however, is the influence of an illustrious name, that in direct opposition to the evidence of historical facts, the assertion of the complete *sterility* of all these speculations is, to the present day, repeated, with undiminished confidence, by writers of unquestionable learning and talents. In one of the most noted physiological works which have lately appeared on the Continent, Bacon's apophthegm is cited more than once with unqualified approbation; although the author candidly owns, that it is difficult for the most *reserved* philosopher always to keep it steadily in view, in the course of his inquiries.*

The prejudice against final causes, so generally avowed by the most eminent philosophers of France, during the eighteenth century, was first introduced into that country by Descartes. It must not, however, be imagined, that, in the mind of this great man, it arose from any bias towards atheism. On the contrary, he himself tells us, that his objection to the research of *uses* or *ends*, was founded entirely on the presumptuous confidence which it seemed to argue in the powers of human reason; as if it were conceivable that the limited faculties of man could penetrate into the counsels of Divine wisdom. Of the existence of God he conceived that a demonstrative proof was afforded by the idea we are able to form of a Being infinitely perfect, and necessarily existing; and it has, with some probability, been conjectured, that it was his partiality to this new argument of his own, which led him to reject the reasonings of his predecessors in support of the same conclusion.†

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* "Je regarde, avec le grand Bacon, la Philosophie des causes finales comme stérile : mais il est bien difficile à l'homme le plus réservé, de n'y avoir jamais recours dans ses explications."—*Rapports du Physique et du Moral de l'Homme. Par M. le Senateur Cabanis*. Tom. I. p. 352. Paris, 1805.

† "Nullas unquam rationes circa res naturales *a fine*, quam Deus aut natura in iis faciendis sibi proposuit, desumemus; quia non tantum debemus nobis arrogare, ut ejus consiliorum participes nos esse putemus." *Princip*. Pars. I. § 28. "Dum hæc perpendo attentius, occurrit primò non mihi esse mirandum si quædam a Deo fiant quorum rationes non intelligam; nec de ejus existentiâ ideo esse dubitandum, quod forte quædam alia esse experiar quæ quare, vel quomodo ab illo facta

To this objection of Descartes, an elaborate, and, in my opinion, a most satisfactory reply, is to be found in the works of Mr. Boyle. The principal scope of his essay may be collected from the following short extract:

"Suppose that a countryman, being in a clear day brought into the garden of some famous mathematician, should see there one of those curious gnomatic instruments, that show at once the place of the sun in the zodiac, his declination from the equator, the day of the month, the length of the day, &c. &c. It would indeed be presumption in him, being unacquainted both with the mathematical disciplines, and the several intentions of the artist, to pretend or think himself able to discover *all the ends* for which so curious and elaborate a piece was framed: but when he sees it furnished with a stile, with horary lines and numbers, and in short with all the requisites of a sun-dial, and manifestly perceives the shadow to mark from time to time the hour of the day, it would be no more a presumption than an error in him to conclude, that (whatever other uses the instrument was fit or was designed for) it is a sun-dial, that was meant to show the hour of the day."*

With this opinion of Boyle that of Newton so entirely coincided, that (according to Maclaurin) he thought the consideration of final causes *essential* to true philosophy; and was accustomed to congratulate himself on the effect of his writings in reviving an attention to them, after the attempt of Descartes to discard them from

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sint non comprehendo; cum enim jam sciam naturam meam esse valde infirmam et limitatam, Dei autem naturam esse immensam, incomprehensibilem, infinitam, ex hoc satis etiam scio innumerabilia illum posse quorum causas ignorem; *atque ob hanc unicam rationem totum illud causarum genus quod a fine peti solet in rebus physicis nullam usum habere existimo*; non enim absque temeritate me puto posse investigare fines Dei." *Meditatio Quarta.*

See Note (BB.)

* In the same Essay, Mr. Boyle has offered some very judicious strictures on the abuses to which the research of final causes is liable, when incautiously and presumptuously pursued. An abstract of these, accompanied with a few illustrations from later writers, might form an interesting chapter in a treatise of inductive logic.

The subject has been since prosecuted with considerable ingenuity by Le Sage of Geneva, who has even attempted (and not altogether without success) to lay down logical rules for the investigation of *ends*. To this study, which he was anxious to form into a separate science, he gave the very ill chosen name of *Teleologie*, a name, if I am not mistaken, first suggested by Wolfius.—For some valuable fragments of his intended work with respect to it, see the Account of his Life and Writings by his friend M. Prévost. (Geneva, 1805.)

physics. On this occasion, Maclaurin has remarked, "that of all sort of causes, final causes are the most clearly placed in our view;—and that it is difficult to comprehend, why it should be thought arrogant to attend to the design and contrivance that is so evidently displayed in nature, and obvious to all men;—to maintain, for instance, that the eye was made for seeing, though we may not be able either to account mechanically for the refraction of light in its coats, or to explain how the image is propagated from the retina to the mind."*—It is Newton's own language, however, which alone can do justice to his sentiments on the present subject.

"The main business of natural philosophy is to argue from phenomena, without feigning hypotheses, and to deduce causes from effects till we come to the very first cause, which certainly is not mechanical; and not only to unfold the mechanism of the world, but chiefly to resolve these and such like questions: *Whence is it that Nature does nothing in vain; and whence arises all that order and beauty which we see in the world?—How came the bodies of animals to be contrived with so much art, and for what ends were there several parts? Was the eye contrived without skill in optics, and the ear without knowledge of sounds?*"†

In multiplying these quotations, I am well aware that authorities are not arguments; but when a prejudice to which authority alone has given currency is to be combated, what other refutation is likely to be effectual?

After all, it were to be wished that the scholastic phrase *final cause* could, without affectation, be dropped from our philosophical vocabulary; and some more unexceptionable mode of speaking substituted instead of it. In this elementary work, I have not presumed to lay aside entirely a form of expression consecrated in the writings of Newton, and of his most eminent followers; but I am fully sensible of its impropriety, and am not without hopes that I may contribute something to encourage the gradual disuse of it, by the indiscriminate employment of the words *ends* and *uses* to convey the same idea. Little more perhaps than the general adoption of one or other of these terms is necessary, to bring candid and reflecting minds to a uniformity of language as well as of sentiment on the point in question.

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* Account of Newton's Philosophical Discoveries, Book I. Chap. II.

† Newton's Optics, Query 28.

It was before observed, with respect to anatomists, that all of them, without exception, whether professedly friendly or hostile to the inquisition of final causes, concur in availing themselves of its guidance in their physiological researches. A similar remark will be found to apply to other classes of scientific inquirers. Whatever their speculative opinions may be, the moment their curiosity is fairly engaged in the pursuit of truth, either physical or moral, they involuntarily, and often perhaps unconsciously, submit their understandings to a logic borrowed neither from the schools of Aristotle nor of Bacon. The ethical system (for example) of those ancient philosophers who held that Virtue consists in following Nature, not only involves a recognition of final causes, but represents the study of them, in as far as regards the ends and destination of our own being, as the great business and duty of life.* The system, too, of those physicians who profess to follow Nature in the treatment of diseases, by watching and aiding her medicative powers, assumes the same doctrine as its fundamental principle. A still more remarkable illustration, however, of the influence which this species of evidence has over the belief, even when we are the least aware of its connexion with metaphysical conclusions, occurs in the history of the French Economical System. Of the comprehensive and elevated views which at first suggested it, the title of ***Physiocratie***, by which it was early distinguished, affords a strong presumptive proof; and the same thing is more fully demonstrated, by the frequent recurrence made in it to the physical and moral laws of Nature, as the unerring standard which the legislator should keep in view in all his positive institutions.* I do not speak at present of the justness of these opinions. I wish only to remark, that, in the statement of them given by their original authors, it is taken for granted as a truth self-evident and indisputable, not merely that benevolent design is manifested in all the physical and moral arrangements connected with this globe, but that the study of these arrangements is indispensably necessary to lay a solid foundation for political science.

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* "Discite, O miseri, et causas cognoscite rerum,
Quid sumus, et quidnam victuri gignimur."

PERSIUS.

Ἐγὼ δέ τι βούλομαι· καταμαθεῖν τὴν φύσιν, καὶ ταύτῃ ἕπεσθαι.

EPICTET.

The same principles appear to have led Mr. Smith into that train of thinking which gave birth to his inquiries concerning National Wealth. "Man," he observes in one of his oldest manuscripts now extant, "is generally considered by statesmen and projectors as the materials of a sort of political mechanics. Projectors disturb nature in the course of her operations in human affairs; and it requires no more than *to let her alone,* and give her fair play in the pursuit of her own designs."—And in another passage: "Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice; all the rest being brought about by the natural course of things. *All* governments which thwart this natural course; which force things into another channel; or which endeavour to arrest the progress of society at a particular point, are unnatural, and to support themselves *are obliged to* be oppressive and tyrannical."† Various other passages of a similar import might be quoted, both from his Wealth of Nations, and from his Theory of Moral Sentiments.

This doctrine of Smith and Quesnay, which tends to simplify the theory of legislation, by exploding the policy of those complicated checks and restraints which swell the municipal codes of most nations, has now, I believe, become the prevailing creed of thinking men all over Europe; and, as commonly happens to prevailing creeds, has been pushed by many of its partisans far beyond the views and intentions of its original authors. Such too is the effect of fashion, on the one hand, and of obnoxious phrases on the other, that it has found some of its most zealous abettors and propagators among writers who would, without a moment's hesitation have rejected, as puerile and superstitious, any reference to *final causes* in a philosophical discussion.

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* "Ces loix forment ensemble ce qu'on appelle *la loi naturelle.* Tous les hommes et toutes les puissances humaines doivent être soumis à ces loix souveraines, institutées par l'être supreme : elles sont immuables et irréfragables, et les meilleures loix possibles ; et par conséquent, la base du governement le plus parfait, et la règle fondamentale de toutes les loix positives ; car les loix positives ne sont que des loix de manutention relatives à l'ordre naturel evidemment le plus avantageux au genre humain.—QUESNAY.

† Biographical Memoirs of Smith, Robertson, and Reid, p. 100.

II.

Danger of confounding Final with Physical Causes in the Philosophy of the Human Mind.

HAVING said so much upon the research of Final Causes in *Physics, properly so called,* I shall subjoin a few remarks on its application to the Philosophy of the Human Mind;—a science in which the just rules of investigation are as yet far from being generally understood. Of this no stronger proof can be produced, than the confusion between final and efficient causes, which perpetually recurs in the writings of our latest and most eminent moralists. The same confusion, as I have already observed, prevailed in the *physical* reasonings of the Aristotelians; but since the time of Bacon, has been so completely corrected, that, in the wildest theories of modern naturalists, hardly a vestige of it is to be traced.

To the logical error just mentioned it is owing, that so many false accounts have been given of the principles of human conduct or of the motives by which men are stimulated to action. When the general laws of our internal frame are attentively examined, they will be found to have for their object the happiness and improvement both of the individual and of society. This is their Final Cause, or the end for which we may presume they were destined by our Maker. But, in such cases, it seldom happens, that, while Man is obeying *the active impulses* of his nature, he has any idea of the ultimate ends which he is promoting; or is able to calculate the remote effects of the movements which he impresses on the little wheels around him. These *active impulses*, therefore, may, in one sense, be considered as the *efficient causes* of his conduct; inasmuch as they are the means employed to determine him to particular pursuits and habits; and as they operate (in the first instance, at least) without any reflection on his part on the purposes to which they are subservient. Philosophers, however, have in every age been extremely apt to conclude, when they had discovered the salutary tendency of any active principle, that it was from a sense of foreknowledge of this tendency that the principle derived its origin. Hence have arisen the theories which attempt to account for all our actions from self-love; and also those which would resolve the whole of morality, either into political views of general expediency, or into an enlightened regard to our own best interests.

I do not know of any author who has been so completely aware of this common error as Mr. Smith. In examining the principles connected with our moral constitution, he always treats separately of their *final causes*, and of the mechanism (as he calls it) by which nature accomplishes the effect; and he has even been at pains to point out to his successors *the great importance* of attending to the distinction between these two speculations.—"In every part of the universe, we observe means adjusted with the nicest artifice to the ends which they are intended to produce; and in the mechanism of a plant or animal body, admire how every thing is contrived for advancing the two great purposes of nature, the support of the individual, and the propagation of the species. But in these, and in all such objects, we still distinguish the efficient from the final cause of their several motions and organizations. The digestion of the food, the circulation of the blood, and the secretion of the several juices which are drawn from it, are operations all of them necessary for the great purposes of animal life; yet we never endeavour to account for them from those purposes as from their efficient causes, nor imagine that the blood circulates, or the food digests of its own accord, and with a view or intention to the purposes of circulation or digestion. The wheels of the watch are all admirably adapted to the end for which it was made, the pointing of the hour. All their various motions conspire in the nicest manner to produce this effect. If they were endowed with a desire and intention to produce it, they could not do it better. Yet we never ascribe any such intention or desire to them, but to the watch-maker, and we know that they are put into motion by a spring, which intends the effect it produces as little as they do. But though, in accounting for the operations of bodies, we never fail to distinguish, in this manner, the efficient from the final cause, in accounting for those of the mind, we are apt to confound these two different things with one another. When, by natural principles, we are led to advance those ends which a refined and enlightened reason would recommend to us, we are very apt to impute to that reason, as to their efficient cause, the sentiments and actions by which we advance those ends, and to imagine that to be the wisdom of Man, which, in reality, is the wisdom of God. Upon a superficial view, this cause seems sufficient to produce the effects which are ascribed to it; and the system of Human Nature seems to be more simple and agreeable, when all its different operations are, in this manner, deduced from a single principle."*

These remarks apply with peculiar force to a theory of morals which has made much noise in our own times;—a theory which resolves the obligation of all the different virtues into a sense of their *utility*. At the time when Mr. Smith wrote, it had been recently brought into fashion by the ingenious and refined disquisitions of Mr. Hume; and there can be little doubt, that the foregoing strictures were meant by the author as an indirect refutation of his friend's doctrines.

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* Theory of Moral Sentiments, Vol. I. p. 216, *et seq.* 6th edit.

The same theory (which is of a very ancient date[*]) has been since revived by Mr. Godwin, and by the late excellent Dr. Paley. Widely as these two writers *differ* in the *source* whence they derive their rule of conduct, and the *sanctions* by which they enforce its observance, they are perfectly agreed about its paramount authority over every other principle of action. "Whatever is *expedient*," says Dr. Paley, "is *right*. It is the utility of any moral rule alone which constitutes the obligation *of* it.[†] . . . . But then, it must be expedient *on the whole*, at the long run, in all its effects collateral and remote, as well as those which are immediate and direct; as it is obvious, that, in computing consequences, it makes no difference in what way, or at what distance they ensue."[‡]—Mr. Godwin has no where expressed himself, on this fundamental question of practical ethics, in terms more decided and unqualified.

The observations quoted from Mr. Smith on the proneness of the mind, in moral speculations, to confound together efficient and final causes, furnish *a key to the* chief difficulty by which the patrons of this specious but very dangerous system have been misled.

Among the qualities connected with the different virtues, there is none more striking than their beneficial influence on social happiness; and accordingly, moralists of all descriptions when employed in enforcing particular duties, such as justice, veracity, temperance, and the various charities of private life, never fail to enlarge on the numerous blessings which follow in their train. The same observation may be applied to *self-interest;* inasmuch, as the most effectual way of promoting it is universally acknowledged to be by a strict and habitual regard to the obligations of morality.—In consequence of this *unity of design*, which is not less conspicuous in the moral than in the natural world, it is easy for a philosopher to give a plausible explanation of all our duties from *one* principle; because the general tendency of all of them is to determine us to the same course of life. It does not, however, follow from this, that it is from such a comprehensive survey of the consequences of human conduct, that our ideas of right and wrong are derived; or that we are entitled, in particular cases, to form rules of action to ourselves, drawn from speculative conclusions concerning the *final cause* of our moral constitution. If it be true (as some theologians have presumed to assert) that benevolence is the sole principle of action in the Deity, we must suppose that the duties of veracity and justice were enjoined by him, *not* on account of their intrinsic rectitude, but of their utility: but still, with respect to man, these are sacred and indispensable laws—laws which he never transgresses without incurring the penalties of self-condemnation and remorse: And indeed if, without the guidance of any internal monitor, he were left to infer the duties incumbent on him from a calculation and comparison of remote effects, we may venture to affirm, that there would not be enough of virtue left in the world to hold society together.

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[*] "Ipsa utilitas, justi prope mater et æqui."—HORAT. Sat. Lib. I. 3.

[†] Principles of Moral and Political Philosiophy, Vol. I. p. 70. 5th edit.

[‡] Ibid. p. 78.

In another part of his work, Dr. Paley explicitly asserts, that *every* moral rule is liable to be superseded in particular cases on the ground of expediency. "Moral philosophy cannot pronounce that any rule of morality is so rigid as to bend to no exceptions; nor, on the other hand, can she comprise these exceptions within any previous description. She confesses, that the obligation of every law depends upon its ultimate utility; that this utility having a finite and determinate value, situations may be feigned, and consequently may possibly arise, in which the general tendency is outweighed by the enormity of the particular mischief; and of course, where ultimate utility renders it as much an act of duty to break the rule, as it is on other occasions to observe it.—Vol. II. p. 411.

To those who have been accustomed to reflect on the general analogy of the human constitution, and on the admirable adaptation of its various parts to that scene in which we are destined to act, this last consideration will, independently of any examination of the fact, suggest a very strong presumption *a priori* against the doctrine to which the foregoing remarks relate. For is it at all consonant with the other arrangements, so wisely calculated for human happiness, to suppose that the conduct of such a fallible and short-sighted creature as Man, would be left to be regulated by no other principle than the private opinion of each individual concerning the *expediency* of his own actions? or, in other words, by the conjectures which he might form on the good or evil resulting *on the whole* from an endless train of future contingencies? Were this the case, the opinions of mankind, with respect to the rules of morality, would be as various as their judgments about the probable issue of the most doubtful and difficult determinations in politics. Numberless cases might be fancied, in which a person would not only *claim* merit but actually *possess* it, in consequence of actions which are generally regarded with indignation and abhorrence; for, unless we admit such duties as justice, veracity, and gratitude, to be immediately and imperatively sanctioned by the authority of reason and of conscience, it follows as a necessary inference, that we are *bound* to violate them, whenever by doing so we have a prospect of advancing any of the essential interests of society; or (which amounts to the same thing) that a good *end* is sufficient to sanctify whatever *means* may appear to us to be necessary for its accomplishment. Even men of the soundest and most penetrating understandings might frequently be led to the perpetration of enormities, if they *had no other* light to guide them but what they derived from their own uncertain anticipations of futurity. And when we consider how small the number of such men is, in comparison of those whose judgments are perverted by the prejudices of education and their own selfish passions, it is easy to see what a scene of anarchy the world would become. Of this, indeed, we have too melancholy an experimental proof, in the history of those individuals, who have, in practice, adopted the rule of *general expediency* as their whole code of morality;—a rule which the most execrable scourges of the human race have, in all ages professed to follow, and of which they have uniformly availed themselves, as an apology for their deviations from the ordinary maxims of right and wrong.

Fortunately for mankind, the peace of society is not thus entrusted to accident, the great rules of a virtuous conduct being confessedly of such a nature as to be obvious to every sincere and well-disposed mind. And it is in a peculiar degree striking, that, while the *theory* of ethics involves some of the most abstruse questions which have ever employed the human faculties, the moral judgments and moral feelings of the most distant ages and nations, with respect to all the most essential duties of life, are one and the same.*

Of this theory of utility, so strongly recommended to some by the powerful genius of Hume, and to others by the well-merited popularity of Paley, the most satisfactory of all refutations is to be found in the work of Mr. Godwin. It is unnecessary to inquire how far the practical lessons he has inculcated are logically inferred from his fundamental principle; for although I apprehend much might be objected to these, even on his own hypothesis, yet, if such be the conclusions to which, in the judgment of so acute a reasoner, it *appeared* to lead with demonstrative evidence, nothing farther is requisite to illustrate the practical tendency of a system, which, absolving men from the obligations imposed on them with so commanding an authority by the moral constitution of human nature, abandons every individual to the guidance of his own narrow views concerning the complicated interests of political society.†

One very obvious consideration seems to have entirely escaped the notice of this, as well as of many other late inquirers: That, in ethical researches, not less than in those which relate to the material universe, the business of the philosopher is limited to the analytical investigation of general laws from the observed phenomena; and that if, in any instance, his conclusions should be found inconsistent with acknowledged facts, the former must necessarily be corrected or modified by the latter. On such occasions, the ultimate appeal must be always made to the moral sentiments and emotions of the human race. The representations, for example, which we read with so much delight, in those poets, of whatever age and country, who have most successfully touched the human heart:—of the heroical sacrifices made to gratitude, to parental duty, to filial piety, to conjugal affection;—are not amenable to the authority of any ethical theory, but are the most authentic records of the phenomena which it is the object of such theories to generalize. The sentiment of Publius Syrus; *Omne dixeris maledictum, quum ingratum hominem dixeris*—speaks a language which accords with every feeling of an unperverted mind;—it speaks the language of Nature, which it is the province of the moralist, *not to criticise*, but to listen to with reverence. By employing our reason to interpret and to obey this, and the other moral suggestions of the heart, we may trust with confidence, that we take the most effectual means in our power to augment the sum of human happiness;—but the discovery of this connexion between *virtue* and *utility* is the slow result of extensive and philosophical combinations; and it would soon cease to have a foundation in truth, if men were to substitute their own conceptions of expediency, instead of those rules of action which are *inspired by the* wisdom of God.*

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* "Si quid rectissimum sit, quærimus; perspicuum est. Si quid maximè expediat; obscurum. Sin ii sumus, qui profectò esse debemus, ut nihil arbitremur expedire, nisi quod rectum honestumque sit; non potest esse dubium, quid faciendum nobis sit."—*Cic. Ep. ad Fam.* IV. 2.

† It is remarkable that Mr. Hume, by far the ablest advocate for the theory in question, has indirectly acknowledged its inconsistence with some of the most important facts which it professes to explain. "Though the *heart*," he observes in the 5th section of his Inquiry concerning Morals, "takes not part entirely with those general notions, nor regulates all its love and hatred by the universal abstract differences of vice and virtue, without regard to self, and the persons with whom we are more intimately connected; yet have these moral differences a considerable influence, and being sufficient, at least for discourse, serve all the purposes in company, on the theatre, and in the schools."—On this passage, the following very curious note is to be found at the end of the volume; a note (by the way) which deserves to be added to the other proofs already given of the irresistible influence which the doctrine of final causes occasionally exercises over the most sceptical minds. "*It is wisely ordained by nature* that private connexions should *commonly* prevail over universal views and considerations; otherwise our affections and actions would be dissipated and lost, for want of a proper limited object."—Does not this remark imply an acknowledgment, First, That the principle of general expediency (the *sole* principle of virtuous conduct, according to Mr. Hume, in our most important transactions with our fellow-creatures) would not contribute to the happiness of society, if men should *commonly* act upon it; and, Secondly, That some provision is made in our moral constitution, that we shall, in fact, be influenced by other motives in discharging the offices of private life?

It must not be concluded from the foregoing observations, that, even in ethical inquiries, the consideration of final causes is to be rejected. On the contrary, Mr. Smith himself, whose logical precepts on this subject I have now been endeavouring to illustrate and enforce, has frequently indulged his curiosity in speculations about *uses* or *advantages;* and seems plainly to have considered them as important objects of philosophical study, not less than *efficient* causes. The only caution to be observed is, that the one may not be confounded with the other.

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* See Note (CC.)

Between these two different researches, however, there is, both in physics and ethics, a very intimate connexion. In various cases, the consideration of final causes has led to the discovery of some general law of nature; and in almost every case, the discovery of a general law clearly points out some wise and beneficent purposes to which it is subservient. Indeed it is chiefly the prospect of such applications which renders the investigation of the general laws interesting to the mind.*

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* See Note (DD.)

CONCLUSION OF PART SECOND.

In the foregoing chapters of the Second Part, I have endeavoured to turn the attention of my readers to various important questions relating to the Human Understanding; aiming, in the first place, to correct some fundamental errors in the theories commonly received with respect to the powers of intuition and of reasoning; and, secondly, to illustrate some doctrines connected with the ground-work of the inductive logic, which have been either overlooked, or misapprehended by the generality of preceding writers. The bulk to which the volume has already extended, renders it impossible for me now to attempt a detailed recapitulation of its contents:—Nor do I much regret the necessity of this omission, having endeavoured, in every instance, as far as I could, to enable the intelligent reader to trace the thread of my discussions.

In a work professedly elementary, the frequent references made to the opinions of others, may, at first sight, appear out of place; and it may not unnaturally be thought, that I have too often indulged in *critical* strictures, where I ought to have confined myself to a didactic exposition of first principles. To this objection I have only to reply, that my aim is not to supplant any of the established branches of academical study; but, by inviting and encouraging the young philosopher, when his academical career is closed, to review, with attention and candor, his past acquisitions, to put him in the way of supplying what is defective in the present systems of education. I have accordingly entitled my book Elements—not of Logic or of Pneumatology, but —of the Philosophy of the Human Mind; a study which, according to my idea of it, presupposes a general acquaintance with the peculiar departments of literature and of science, but to which I do not know that any elementary introduction has yet been attempted. It is a study, indeed, whereof little more perhaps than *the ele-*

ments can be communicated to the mind of one individual to that of another.

In proof of this, it is sufficient here to hint, (for I must not at present enlarge on so extensive a topic,) that a knowledge of the general laws which regulate the intellectual phenomena is, to the logical student, of little practical value, but as a preparation for the study of himself. In this respect, the anatomy of the mind differs essentially from that of the body; the structure of the former (whatever collateral aids may be derived from observing the varieties of genius in our fellow-creatures) being accessible to those alone who can retire into the deepest recesses of their own internal frame; and even to *these* presenting, along with the generic attributes of the race, many of the specific peculiarities of the individual. On this subject every writer, whose speculations are at all worthy of notice, must draw his chief materials from within; and it is only by comparing the conclusions of *different* writers, and subjecting all of them to the test of our personal experience, that we can hope to separate the essential principles of the human constitution from the unsuspected effects of education and of temperament;* or to apply with advantage, to our particular circumstances, the combined results of our reading and of our reflections. The constant appeal which in such inquiries, the reader is thus forced to make to his own consciousness and to his own judgment, has a powerful tendency to form a habit, not more essential to the success of his metaphysical researches, than of all his other speculative pursuits.

Nearly connected with this habit, is a propensity to weigh and to ascertain the exact import of words; one of the nicest and most difficult of all analytical processes; and *that* upon which more stress has been justly laid by our best modern logicians, than upon any other *organ* for the investigation of truth. For the culture of this propensity, no science is so peculiarly calculated to prepare the mind, as the study of its own operations. *Here*, the imperfections of words constitute the principal obstacle to our progress; nor is it possible to advance a single step, without struggling against the associations imposed by the illusions of metaphorical terms, and of analogical theories. Abstracting, therefore, from its various practical applications, and considering it merely as a gymnastic exercise to the reasoning powers, this study seems pointed out by nature, as the best of all schools for inuring the understanding to a cautious and skilful employment of language as the instrument of thought.

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* I use the word *temperament*, in this instance, as synonymous with the *idiosyncrasy* of medical authors; a term which I thought might have savoured of affectaton if applied to *the mind;* although authorities for such an employment of it are not wanting among old English writers. One example, directly in point, is quoted by Johnson from Glanvillee. "The understanding also hath its *idiosyncrasies*, as well as other faculties."

The two first chapters of this volume relate to logical questions, on which the established opinions appear to me to present stumbling-blocks at the very threshold of the science. In treating of these, I have canvassed with freedom, but, I hope, with due respect, the doctrines of some illustrious moderns, whom I am proud to acknowledge as my masters; of those more particularly, whose works are in the highest repute in our British Universities, and whose errors I was, on that account, the most solicitous to rectify. For the space allotted to my criticisms on Condillac, no apology is necessary to those, who have the slightest acquaintance with the present state of philosophy on the Continent, or who have remarked the growing popularity, in this Island, of some of his weakest and most exceptionable theories.—On various controverted points connected with the theory of evidence, both demonstrative and experimental, I trust, with some confidence, that I shall be found to have thrown considerable light: in other instances, I have been forced to content myself with proposing my doubts; leaving the task of solving them to future inquirers. To awaken a dormant spirit of discussion, by pointing out the imperfections of generally received systems, is at least one step gained towards the farther advancement of knowledge.

It is justly and philosophically remarked by Burke, that "nothing tends more to the corruption of science than to suffer it to stagnate. These waters must be troubled before they can exert their virtues. A man who works beyond the surface of things, though he may be wrong himself, yet he clears the way for others, and may chance to make even his errors subservient to the cause of truth." *

The subsequent chapters, relative to the Baconian Logic, bear, all of them, more or less in their general scope, on the theory of the intellectual powers, and on the first principles of human knowledge. In this part of my work, the reader will easily perceive, that I do not profess to deliver logical precepts; but to concentrate, and to reflect back, on the Philosophy of the Mind, whatever scattered lights I have been able to collect from the experimental researches to which that Philosophy has given birth. I have aimed, at the same time, (and I hope not altogether without success,) to give somewhat more of precision to the technical phraseology of the Baconian school, and of correctness to their metaphysical ideas.

Before concluding these speculations, it may not be improper to caution my readers against supposing, that when I speak of the Baconian school, or of the Baconian logic, I mean to ascribe entirely to the *Novum Organon* the advances made in physical science, since the period of its publication. The singular effects of this, and of the other inestimable writings of the same author, in forwarding the subsequent progress of scientific discovery, certainly entitle his name, far more than that of any other individual, to be applied as a distinguishing epithet to the modern rules of philosophizing; but (as I have elsewhere observed) "the genius and writings of Bacon himself were powerfully influenced by the circumstances and character of his age: Nor can there be a doubt, that he only accelerated a revolution which was already prepared by many concurrent causes." †—My reasons for thinking so, which rest chiefly on historical retrospects, altogether foreign to my present design, I must delay stating, till another opportunity.

To this observation it is of still greater importance to add, that, in contrasting the spirit and the utility of the new logic with those of the old, I have no wish to see the former substituted, in our universities, in room of the latter. By a strange inversion in the order of instruction, Logic, instead of occupying its natural place at the close of the academical course, has always been considered as an introduction to the study of the sciences ; and has, accordingly, been obtruded on the uninformed minds of youth, at their first entrance into the schools. While the syllogistic art maintained its reputation, this inversion was probably attended with little practical inconvenience; the trite and puerile examples commonly resorted to for the illustration of its rules, presupposing a very slender stock of scientific attainments; but now, when the word *logic* is universally understood in a more extensive sense, as comprehending, along with an outline of Aristotle's *Organon*, some account of the doctrines of Bacon, of Locke, and of their successors, it seems indispensably necessary, that this branch of education should be delayed till the understanding has acquired a wider and more varied range of ideas, and till the power of *reflection* (the last of our faculties which nature unfolds) begins to solicit its appropriate nourishment. What notions can be annexed to such words as analysis, synthesis, induction, experience, analogy, hypothetical and legitimate theories, demonstrative and moral certainty, by those whose attention has hitherto been exclusively devoted to the pursuits of classical learning ? A fluent command, indeed, of this technical phraseology may be easily communicated ; but it would be difficult to devise a more effectual expedient for misleading, at the very outset of life, the inexperienced and unassured judgment. The perusal of Bacon's writings, in particular, disfigured as they are by the frequent use of quaint and barbarous expressions, suited to the scholastic taste of his contemporaries, ought to be carefully reserved for a riper age.*

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* Inquiry into the Sublime and Beautiful, Part I. Sect. xix.

† Outlines of Moral Philosophy, first printed in 1793.

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* Haller mentions, in his Elements of Physiology, that he was forced to enter on the study of logic in the tenth year of his age." Memini me annum natum decimum, quo avidus historiam et poesin devorâssem, ad logicam, et ad CLAUBERGIANAM logicam ediscendam coactum fuisse, quâ nihil poterat esse, pro hujusmodi homuncione. sterilius." (Tomus VIII. Pars Secunda, p. 24. Lausannæ, 1778.

In confirmation of this last remark, many additional arguments might be drawn from the peculiar circumstances in which Bacon wrote. At the period when he entered on his literary career, various branches of physical science were already beginning to exhibit the most favorable presages of future improvement; strongly inviting his original and powerful mind to co-operate in the reformation of philosophy. The turn of his genius fortunately led him to employ himself chiefly in general suggestions for the advancement of learning; and, leaving to others the task of inductive investigation, to aim rather at stating such rules as might direct and systematize their exertions. In his own experimental researches he was not very fortunate; nor is much reliance to be placed on the facts recorded in his *Histories*. Perhaps the comprehensiveness of his views diminished his curiosity with respect to the particular objects of science; or, perhaps he found the multiplicity of his engagements in active life, more consistent with speculations, in which the chief materials of his reasonings were to be drawn from his own reflections, than with inquiries which demanded an accurate observation of external phenomena, or a minute attention to experimental processes. In this respect, he has been compared to the Legislator of the Jews, who conducted his followers within sight of their destined inheritance; and enjoyed in distant prospect, that promised land which he himself was not permitted to enter.*

It seems difficult to imagine any attempt more extravagant, than that of instructing a child, only ten years old, in the logic of the schools; and yet, it is by no means a task so completely impracticable, as to convey to a pupil, altogether uninitiated in the Elements of Physics, a distinct idea of the object and rules of the **Novum Organon**.

The example of Mr. Smith, during the short time he held the Professorship of Logic, at Glasgow, is worthy of imitation in those universities which admit of similar deviations from old practices. For an account of his plan, see Biographical Memoirs of Smith, Robertson, and Reid, p. 12. where I have inserted a slight but masterly sketch of his academical labors, communicated to me by his pupil and friend, the late Mr. Millar.

* See Cowley's Ode, prefixed to Sprat's History of the Royal Society.

Nor does Bacon himself seem to have been at all disposed to overrate the value of his own contributions to Experimental Science. "In rebus quibuscunque difficilioribus," he has observed on one occasion, "non expectandum est ut quis simul et serat et metat; sed præparatione opus est, ut per gradus maturescant." But the most remarkable passage of this sort, which I recollect in his writings, occurs towards the close of his great work, *De Augmentis Scientiarum*:— "Tandem igitur paululum respirantes, atque ad ea, quæ prætervecti sumus, The effect of this prophetic imagination in clothing his ideas, to a greater degree than a severe logician may approve, with the glowing colors of poetical diction, was unavoidable. The wonder is, that his style is so seldom chargeable with vagueness and obscurity; and that he has been able to bequeath to posterity so many cardinal and eternal truths, to which the progressive light of science is every day adding a new accession of lustre. Of these truths, however, (invaluable in themselves as heads or texts, pregnant with thought) many,—to borrow the expression of a Greek poet,—*sound only to the intelligent*;—while others present those confident but indefinite anticipations of intellectual regions yet undiscovered, which, though admirably calculated to keep alive and to nourish the ardor of the man of science, are more fitted to awaken the enthusiasm than to direct the studies of youth. Some of them at the same time (and *these* I apprehend, cannot be too early impressed on the memory) are singularly adapted to enlarge and to elevate the conceptions; exhibiting those magnificent views of knowledge, which, by identifying its progress with the enlargement of human power and of human happiness, ennoble the humblest exertions of literary industry, and annihilate, before the triumphs of genius, the most dazzling objects of vulgar ambition.—A judicious selection of such passages, and of some general and striking aphorisms from the Novum Organon, would form a useful manual for animating the academical tasks of the student; and for gradually conducting him from the level of the subordinate sciences, to the *vantage-ground* of a higher philosophy.

Unwilling as I am to touch on a topic so hopeless as that of Academical Reform, I cannot dismiss this subject, without remarking, as a *fact* which, at some future period, will figure in literary history, that two hundred years after the date of Bacon's philosophical works, the

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oculos reflectentes, hunc tractatum nostrum non absimilem esse censemus sonis illis et præludiis, quæ prætentant musici, dum fides ad modulationem concinnant: Quæ ipsa quidem auribus ingratum quiddam et asperum exhibent; at in causâ sunt, ut quæ sequuntur omnia sint suaviora: Sic nimirum nos in animum induximus, ut in citharâ Musarum concinnandâ, et ad harmoniam veram redigendâ, operam navaremus, quo ab aliis postea pulsentur chordæ, meliore digito, aut plectro."—BACON.

antiquated routine of study, originally prescribed in times of scholastic barbarism and of popish superstition, should in so many Universities, be still suffered to stand in the way of improvements, recommended at once by the present state of the sciences, and by the order which nature follows in developing the intellectual faculties. On this subject, however, I forbear to enlarge.—Obstacles of which I am not aware may perhaps render any considerable innovations impracticable; and, in the mean time, it would be vain to speculate on ideal projects, while the prospect of realizing them is so distant and uncertain.

NOTES

AND

ILLUSTRATIONS.

NOTES AND ILLUSTRATIONS.

Note (A.) page 27.

Of the fault in Euclid's arrangement which I have here remarked, some of the ancient editors were plainly aware, as they removed the two *theorems* in question from the class of axioms, and placed them, with at least an equal impropriety, in that of postulates. "In quibusdam codicibus," says Dr. Gregory, "Axiomata 10 et 11 inter postulata numerantur."—*Euclidis quæ supersunt omnia.* Ex Recens. Dav. Gregorii. Oxon. 1703. p. 3.

The 8th Axiom too in Euclid's enumeration is evidently out of its proper place. *Καὶ τὰ ἐφαρμόξοντα ἐπ’ ἄλληλα ἴσα ἀλλήλοις ἐστὶ*:—thus translated by Dr. Simson: "Magnitudes which coincide with one another, that is, which exactly fill the same space, are equal to one another." This, in truth, is not an axiom, but a definition. It is the definition of geometrical equality; the fundamental principle upon which the comparison of all geometrical magnitudes will be found ultimately to depend.

For *some* of these slight logical defects in the arrangement of Euclid's definitions and axioms, an ingenious, and, I think, a solid apology, has been offered by M. Prévost, in his *Essais de Philosophe.* According to this author, (if I rightly understand his meaning,) Euclid was himself fully aware of the objections to which this part of his work is liable: but found it impossible to obviate them, without incurring the still greater inconvenience of either departing from those modes of proof which he had resolved to employ exclusively in the composition of his Elements;* or of revolting the student, at his first outset, by prolix and circuitous demonstrations of manifest and indisputable truths. I shall distinguish by Italics, in the following quotation, the clauses to which I wish more particularly to direct the attention of my readers.

"C'est donc l'imperfection (peut-être inévitable) de nos conceptions, qui a engagé à faire entrer les axiomes pour quelque chose dans les principes des sciences de raisonnement pur. Et ils y font un double office. Les uns remplacent des définitions. Les autres remplacent des propositions susceptibles d'être démontrées. J'en donnerai des exemples tirés des Elémens d'Euclide.

"Les axiomes remplacent quelquefois des définitions très faciles à faire comme celle du mot *tout.* (El. Ax. 9.) *D'autres suppléent à certaines définitions difficiles et qu'on évite, comme celles de la ligne droite et de l'angle.*

"Quelques axiomes remplacent des théorèmes. J'ignore si (dans les principes d'Euclide) l'axiome 11 peut-être démontré (comme l'ont cru Proclus et tant d'autres anciens et modernes.) *S'il peut l'être, cet axiome supplée à une démonstration probablement laborieuse.*

"Puisque les axiomes ne font autre office que suppléer à des définitions et à des théorèmes, on demandera peut-être qu'on s'en passe. Observons 1. *Qu'ils évitent souvent des longueurs inutiles.* 2. *Qu'ils tranchent les disputes à l'époque même ou la science est imparfait.* 3. *Que s'il est un état, auquel la science puisse s'en passer (ce que je n'affirme point), il est du moins sage, et même indispensable, de les employer, tant que quelque insuffisance, dans ce degré de perfection où l'on tend, interdit un ordre absolument irréprochable.* Ajoutons 4. Que dans chaque science il y a ordinairement un principe qu'on pourroit appeller dominant, et qui par cette raison seule (et independamment de celles que je viens d'alléguer) a paru devoir être sorti, pour ainsi dire, du champ des définitions pour être mis en vue sous forme d'axiome. Tel me paroit être en géométrie le principe de congruence contenu dans le 8 axiome d'Euclide."—*Essais de Philosophie,* Tom. II. pp. 30, 31, 32.

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* By introducing, for example, the idea of *Motion*, which he has studied to avoid, as much as possible, in delivering the Elements of Plane Geometry.

These remarks go far in my opinion, towards a justification of Euclid for the latitude with which he has used the word *axiom* in his Elements. As in treating, however, of the fundamental laws of human belief, the utmost possible precision of language is indispensably necessary, I must beg leave once more to remind my readers, that, in denying *Axioms* to be the first principles of reasoning in mathematics, I restrict the meaning of that word to such as are analogous to the first seven in Euclid's list. Locke, in what he has written on the subject, has plainly understood the word in the same limited sense.

Note (B.) page 49.

The prevalence in India of an opinion bearing *some* resemblance to the Berkeleian Theory may be urged as an objection to the reasoning in the text; but the fact is, that this resemblance is much slighter than has been generally apprehended. (See Philosophical Essays, pp. 81, 82, *et. seq.*) On this point the following passage from Sir William Jones is decisive; and the more so, as he himself has fallen into the common mistake of identifying the Hindu belief with the conclusions of Berkeley and Hume.

"The fundamental tenet of the *Védánti* school consisted, *not in denying the existence of matter, that is, of solidity, impenetrability, and extended figure,* (*to deny which would be lunacy*) *but in correcting the popular notion of it*, and in contending, that it has no essence independent of material perception, that existence and perceptibility are convertible terms, that external appearances and sensations are illusory, and *would vanish into nothing, if the divine energy, which alone sustains them, were suspended but for a moment;*[*] an opinion which Epicharmus and Plato seem to have adopted, and which has been maintained in the present century with great elegance, but with little public applause; partly because it has been misunderstood, and partly because it has been misapplied by the false reasoning of some unpopular writers, who are said to have disbelieved in the moral attributes of God, whose omnipresence, wisdom, and goodness, are the basis of the Indian philosophy. I have not sufficient evidence on the subject to profess a belief in the doctrine of the *Védánta*, which human reason alone could, perhaps, neither fully demonstrate, nor fully disprove; but it is manifest, that nothing can be farther removed from impiety than a system wholly built on the purest devotion."—*Works of Sir William Jones*, Vol. I. pp. 165, 166.

From these observations, (in some of which, I must be permitted to say, there is a good deal of indistinctness, and even of contradiction,) it may on the whole be inferred, 1. That in the tenets of the Védánti school, however different from the first apprehensions of the unreflecting mind, there was nothing *inconsistent* with the fundamental laws of human belief, any more than in the doctrine of Copernicus concerning the earth's motion. 2. That these tenets were rather articles of a theological creed, than of a philosophical system; or at least, that the two were so blended together, as sufficiently to account for the hold which, independently of any refined reasoning, they had taken of the popular belief.

In this last conclusion I am strongly confirmed, by a letter which I had the pleasure of receiving, a few years ago, from my friend Sir James Mackintosh, then Recorder of Bombay. His good nature will, I trust, pardon the liberty I take in mentioning his name upon the present occasion, as I wish to add to the following very curious extract, the authority of so enlightened and philosophical an observer. Amidst the variety of his other important engagements, it is to be hoped that the results of his literary researches and speculations, while in the East, will not be lost to the world.

. . . . . "I had yesterday a conversation with a young Bramin of no great learning, the son of the Pundit (or assessor for Hindu law) of my court. He told me, that besides the myriads of gods whom their creed admits, there was one whom they know by the name of Brim, or the great one, without form or limits, whom no created intellect could make any approach towards conceiving; that, in reality, there were no trees, no houses, no land, no sea, but all without was Maia, or illusion, the act of Brim; that whatever we saw or felt was only a dream, or, as he expressed it in his imperfect English, thinking in one's sleep, and that the reunion of the soul to Brim, from whom it originally sprung, was the awakening from the long sleep of finite existence. All this you have heard and read before as Hindu speculation. What struck me was, that speculations so refined and abstruse should, in a long course of ages, have fallen through so great a space as that which separates the genius of their original inventor from the mind of this weak and unlettered man. The names of these inventors have perished; but their ingenious and beautiful theories, blended with the most monstrous superstitions have descended to men very little exalted above the most ignorant populace, and are adopted by them as a sort of articles ot faith, without a suspicion of their philosophical origin, and without the possibility of comprehending any part of the premises from which they were deduced. I intend to investigate a little the history of these opinions, for I am not altogether without apprehension, that we may all the while be mistaking the hyperbolical effusions of mystical piety, for the technical language of a philosophical system. Nothing is more usual, than for fervent devotion to dwell so long and so warmly on the meanness and worthlessness of created things, and on the all-sufficiency of the Supreme Being, that it slides insensibly from comparative to absolute language, and, in the eagerness of its zeal to magnify the Deity, seems to *annihilate* every thing else. To distinguish between the very different import of the same words in the mouth of a mystic and of a sceptic, requires more philosophical discrimination than most of our Sanscrit investigators have hitherto shown."

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[*] Sir William Jones here evidently confounds the system which represents the material universe as not only at first *created*, but as every moment *upheld* by the agency of Divine Power, with that of Berkeley and Hume, which, denying the distinction between primary and secondary qualities, asserts, that extension, figure, and impenetrability are not less inconceivable, without a *percipient* mind, than our sensations of heat and cold, sounds and odors. According to both systems, it may undoubtedly be said, that the material universe has no existence independent of *mind;* but it ought not to be overlooked, that in the *one*, this word refers to the Creator, and in the *other*, to the created percipient.

Note (C.) page 57.

The private correspondence here alluded to, was between Mr. Hume and the late Sir Gilbert Elliott; a gentleman who seems to have united, with his other well-known talents and accomplishments, a taste for abstract disquisitions, which rarely occurs in men of the world; accompanied with that soundness and temperance of judgment which, in such researches, are so indispensably necessary to guard the mind against the illusions engendered by its own subtilty. In one of his letters (of which the original draft in his own hand-writing was communicated to me by the Earl of Minto) he expresses himself thus:*

. . . . "I admit, that there is no writing or talking of any subject which is of importance enough to become the object of reasoning, without having recourse to some degree of subtilty and refinement. The only question is, where to stop, how far we can go, and why no farther? To this question I should be extremely happy to receive a satisfactory answer. I can't tell if I shall rightly express what I have just now in my mind; but I often imagine to myself, that I perceive within me a certain instinctive feeling, which shoves away at once all over subtile refinemets, and tells me, with authority, that these air-built notions are inconsistent with life and experience, and by consequence cannot be true or solid. From this I am led to think, that the speculative principles of our nature ought to go hand in hand with the practical ones; and, for my own part, when the former are so far pushed, as to leave the latter quite out of sight, I am always apt to suspect that we have transgressed our limits. If it should be asked, how far will these practical principles go? I can only answer, that the former difficulty will recur, unless it be found, that there is *something* in the intellectual part of our nature, resembling the moral sentiment in the moral part of our nature, which determines this, as it were, instinctively. Very possibly, I have wrote nonsense; however, this notion first occurred to me at London, in conversation with a man of some depth of thinking; and talking of it since to your friend Henry Home,† I found that he seemed to entertain some notions nearly of the same kind, and to have pushed them much farther."

The *practical principles* referred to in this extract, seem to me to correspond very nearly with what I have called *fundamental laws of belief*, or *first elements of human reason*; and the SOMETHING *in the intellectual part of our nature, resembling the moral sentiment in the moral part of our nature*, is plainly descriptive of what Reid and others have since called *common sense*; coinciding, too, in substance with the philosophy of Lord Kames, who refers our belief of the existence of the Deity, and of various other primary truths, to particular *senses*, forming a constituent part of our intellectual frame. I do not take upon me to defend the forms of expression which Mr. Hume's very ingenious correspondent has employed to convey his ideas; and which, it is probable, he did not think it necessary for him, in addressing a confidential friend, to weigh with critical exactness: but his doctrine must be allowed to approximate remarkably to those parts of the works of Reid, where he appeals from the paradoxical conclusions of metaphysicians, to the principles on which men are compelled, by the constitution of their nature, to judge and to act in the ordinary concerns of life;—as well as to various appeals of the same kind, which occur in Lord Kame's writings. My principal object, however, in introducing it here, was to show, that this doctrine was the natural result of the state of science at the period when Reid appeared; and, consequently, that no argument against his originality in adopting it can reasonably be founded on a coincidence between his views concerning it and those of any preceeding author.

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* The letter is dated in 1751.

† Afterwards Lord Kames.

Of Mr. Hume's respect for the literary attainments of this correspondent, so strong a proof occurs in a letter, (dated Ninewells, March 10, *1751*,) *that* I am tempted to subjoin to the foregoing quotation the passage to which I allude.

"You would perceive, by the sample I have given you, that I make Cleanthes the hero of the dialogue. Whatever you can think of to strengthen that side of the argument, will be most acceptable to me. Any propensity you imagine I have to the other side crept in upon me against my will; and 'tis not long ago that I burned an old manuscript book, wrote before I was twenty, which contained, page after page, the gradual progress of my thoughts on that head. It began with an anxious search after arguments to confirm the common opinion: Doubts stole in,—dissipated,—returned,—were again dissipated,—returned again: And it was a perpetual struggle of a restless imagination against inclination, perhaps against reason.

"I have often thought, that the best way of composing a dialogue would be, for two persons that are of different opinions about any question of importance, to write alternately the different parts of the discourse, and reply to each other. By this means that vulgar error would be avoided, of putting nothing but nonsense into the mouth of the adversary: and, at the same time, a variety of character and genius being upheld, would make the whole *look more natural* and unaffected. Had it been my good fortune to live near you, I should have *taken* upon me the character of Philo in the dialogue, which you 'll own I could have supported naturally enough: and you would not have been averse to that of Cleanthes." . . . .

In a postscript to this letter, Mr. Hume recurs to the same idea. "If you 'll be persuaded to assist me in supporting Cleanthes, I fancy you need not take the matter any higher than Part 3. He allows, indeed, in Part 2d, that all our inference is founded on the similitude of the works of nature to the usual effects of mind: otherwise they must appear a mere chaos. The only difficulty is, why the other dissimilitudes do not weaken the argument: And, indeed, it would seem from experience and feeling, that they do not weaken it so much as we might reasonably expect. A theory to solve this would be very acceptable." *

Note (D.) page 62.

It would perhaps be difficult to mention another phrase in our language, which admits of so great a variety of interpretations as *common sense*; and to which, of consequence, it could have been equally dangerous to annex a new technical meaning in stating a controversial argument. Dr. Beattie has enumerated some of these in the beginning of his Essay, but he has by no means exhausted the subject: nor is his enumeration altogether unexceptionable in point of logical distinctness. On this point, however, I must allow my readers to judge for themselves.—See Essay on the Nature and Immutability of Truth, p. 37, *et seq.* 2d. Edit.

The Latin phrase *sensus communis* has also been used with much latitude. In various passages of Cicero it may be perfectly translated by the English phrase *common sense*; and, in the same acceptation, it is often employed in modern latinity. Of this (not to mention other authorities) many examples occur in the

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* From the above quotations it appears, that Mr. Hume's posthumous work, entitled Dialogues concerning Natural Religion, was projected, and, in part at least, executed, twenty-five years before his death.

Lectiones Mathematicæ of Dr. Barrow; a work not more distinguished by originality and depth of thought, than by a logical precision of expression. In one of these, he appeals to *common sense* (*sensus communis*,) in proof of the circumference of the circle being less than the perimeter of the circumscribed square.—Lect. 1.

On other occasions, the *sensus communis* of classical writers plainly means something widely different; as in those noted lines of Juvenal, so ingeniously illustrated by Lord Shaftsbury in his Essay on the Freedom of Wit and Humor.

> "Hæc satis ad juvenem, quem nobis fama superbum
> Tradit, et inflatum, plenumque Nerone propinquo.
> Rarus enim ferme *sensus communis* in illâ
> Fortunâ."———

"Some commentators," says Shaftsbury, "interpret this very differently from what is generally apprehended. They make this *common sense* of the poet, by a Greek derivation, to signify sense of public weal, and of the common interest; love of the community or society, natural affection, humanity, obligingness, or that sort of civility which rises from a just sense of the common rights of mankind, and the natural equality there is among those of the same species.

"And, indeed, if we consider the thing nicely, it must seem somewhat hard in the poet to have deny'd wit or ability to a court such as that of Rome, even under a Tiberius or a Nero. But for humanity or sense of public good, and the common interest of mankind, 'twas no such deep satire to question whether this was properly the spirit of a court. 'Twas difficult to apprehend what Community subsisted among courtiers; or what Public among an absolute Prince and his slave-subjects. And for real *society*, there could be none between such as had no other *sense* than that of private good.

"Our poet, therefore, seems not so immoderate in his censure; if we consider it is the *heart*, rather than the *head*, he takes to task: when reflecting on a court education, he thinks it unapt to raise any affection towards a country; and looks upon young Princes and Lords as the *young masters* of the world; who, being indulged in all their passions, and trained up in all manner of licentiousness, have that thorough contempt and disregard of Mankind, which Mankind in a manner deserves, where arbitrary power is permitted, and a tyranny adored."

While I entirely agree with the general scope of these observations, I am inclined to think, that the *sensus communis* of Juvenal might be still more precisely rendered by *sympathy*; understanding this word (in the appropriate acceptation annexed to it by Mr. Smith) as synonymous with that fellow-feeling which disposes a man, in the discharge of his social duties, to place himself in the situation of others, and to regulate his conduct accordingly. Upon this supposition, the reflection in question coincides nearly with one of Mr. Smith's own maxims, that "the great *never* look upon their inferiors as their fellow creatures;" *—a maxim which, although sufficiently founded in fact to justify the sarcasm of the satirical poet, must (it is to be hoped for the honor of human nature) be understood with considerable limitations, when stated as a correct enunciation of philosophical truth.

It yet remains for me to take some notice of the *sensus communis* of the schoolmen; an expression which is perfectly synonymous with the word *conception*, as defined in the first volume of this work. It denotes the power whereby the mind is enabled to *represent* to itself any absent object of perception, or any sensation which it has formerly experienced. Its *seat* was supposed to be that part of the brain (hence called the *sensorium*, or the *sensorium commune*) where the nerves from all the organs of perception terminate. Of the peculiar function allotted to it in the scale of our intellectual faculties, the following account is given by Hobbes: "Some say the senses receive the species of things, and deliver them to the Common Sense; and the Common Sense delivers them over to the Fancy; and the Fancy to the Memory, and the Memory to the Judgment; like handing of things from one to another, with many words making nothing understood."—*Of Man*, Part I. Chap. 2.

Sir John Davis, in his poem on the Immortality of the Soul, (published in the reign of Queen Elizabeth) gives the name of *common sense* to the power of *imagination*; (See Sections XIX. and XX.) and the very same phraseology occurs, at a later period, in the Philosophy of Descartes: (see, in particular, his Second Meditation, where he uses *Sensus Communis* as synonymous with *Potentia Imaginatrix*.) Both of these writers, as appears evidently from the context, understand by *Imagination* what I have called *Conception*. To the power *now* denoted by the word *Imagination*, Sir John Davis gives the name of *Fantasy*. Gassendi seems disposed to consider this use of the phrase *Sensus Communis* as an innovation of Descartes, (see his Objections to Descartes' Second Meditation, § 6.) but it had been previously adopted by various philosophical writers; and, in the English schools, was at that time familiar to every ear.

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* Theory of Moral Sentiments, Vol. I. p. 136, 6th edit.

The singular variety of acceptations of which this phrase is susceptible; and the figure which, on different occasions, it has made in the history of philosophy, will, I trust, furnish a sufficient apology for the length as well for the miscellaneous nature of the foregoing remarks.*

Note (E.) page 72.

The Arithmetical Prodigy, alluded to in the text, is an American boy, (still I believe, in London,) of whose astonishing powers in performing, by a mental process, hitherto unexplained, the most difficult numerical operations, some accounts have lately appeared in various literary journals. When the sheet containing the reference to this note was thrown off, I entertained the hope of having an opportunity, before reaching the end of this volume, to ascertain, by personal observation, some particulars with respect to him, which I thought might throw light on my conclusions concerning the faculty of Attention, in the former volume of this work. In this expectation, however, I have been disappointed; and have, therefore, only to apologize for having inadvertently excited a curiosity which I am at present unable to gratify.

[Since the first edition of this volume was published, I have seen the boy here alluded to; but for too short a time, and under too unfavorable circumstances, to be able to form any satisfactory conclusions concerning the nature of *his* arithmetical processes. Whatever opinion may be entertained on this point, every person who has witnessed his public exhibitions must allow, that his powers of Memory and of concentrated Attention, when contrasted with his very tender years, and with the constitutional playfulness of his *disposition, entitle him* to a conspicuous place among the rare phenomena of the intellectual world. Nor can I forbear to add, that the general character of *his own mind* seems to be simple, amiable, and interesting. When further advanced in life, he may probably have it in his power to communicate some curious information with respect to the origin and history of his peculiar intellectual habits. In the mean time, I must decline, for obvious reasons, to say any thing farther on the subject.]

Note (F.) page 118.

Ἐν τούτοις ἡ ἰσότης ἑνότης. "In mathematical quantities, equality is identity."—*Arist.* Met. x. c. 3.

This passage has furnished to Dr. Gillies (when treating of the theory of syllogisms,) the subject of the following comment, in which, if I do not greatly deceive myself, he has proceeded upon a total misapprehension of the scope of the original: "In mathematical quantities," Aristotle says, that, "equality is sameness," because *ὁ λόγος ὁ τῆς πρώτης οὐσίας εἷς ἐστι*. "The definition of any particular object denoted by the one is precisely the same with the definition of any particular object denoted by the other."—*Gillie's Aristotle*, Vol. I. p. 87.

In order to enable my readers to form a judgment of the correctness of this paraphrase, I must quote Aristotle's words, according to his own arrangement, which, in this instance, happens to be directly contrary to that adopted by his interpreter. *Ἔτι δὲ ἂν ὁ λόγος ὁ τῆς πρώτης οὐσίας εἷς ᾖ, οἷον αἱ ἴσαι γραμμαὶ εὐθεῖαι αἱ αὐταὶ, καὶ τὰ ἴσα καὶ τὰ ἰσογώνια τετράγωνα, καίτοι πλείω· ἀλλ' ἐν τούτοις ἡ ἰσότης ἑνότης.* The first clause of this passage is, from its conciseness, obscure; but Aristotle's meaning, on the whole, seems to be this:—"That all those magnitudes, which bear the same *ratio* to the same magnitude, though in fact they may form a *multitude*, yet, in a scientific view, they may be regarded as *one;* the mathematical notion of equality being ultimately resolvable into that of *unity* or identity."[*] It was probably to obviate any difficulty that might have been suggested by diversities of *figure*, that Aristotle has confined his examples to equal straight lines, and to such quadrangles as are not only equal but similar.

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* It has been observed to me very lately by a learned and ingenious friend, that in one of the phrases which I have proposed to substitute for the *common sense* of Buffier and Reid, I have been anticipated, two hundred years ago, by Sir Walter Raleigh. "Where natural reason hath built any thing so strong against itself, as the same reason can hardly assail it, much less batter it down; the same, in every question of nature, and infinite power, may be approved for a *fundamental law of human knowledge*." (Preface to Raleigh's History of the World.) The coincidence in point of *expression*, is not a little curious; but is much less wonderful than the coincidence of the *thought* with the soundest logical conclusions of the eighteenth century.—The very eloquent and philosophical passage which immediately follows the above sentence, is not less worthy of attention.

Let us now consider the paraphrase of Dr. Gillies. "In mathematical quantities, equality is sameness, because the *definition* of any particular object denoted by the one, is precisely the same with the *definition* of any particular object denoted by the other." Are we to understand by this, that "to all things which are equal the same definition is applicable;" or conversely, that "all things to which the same definition is applicable, are equal?" On the former supposition, it would follow, that the same definition is applicable to a circle, and to a triangle having its base equal to the circumference, and its altitude to the radius. On the latter, that all circles are of the same magnitude; all squares, and all equilateral triangles.—There is, indeed, one sense wherein those geometrical figures which are called by the same name, (all circles, for example,) may be identified in the mind of the logician; inasmuch as any theorem which is proved of one, must equally hold true of all the rest; and the reason of this is assigned, with tolerable correctness, in the last clause of the sentence quoted from Dr. Gillies. But how this reason bears on the question with respect to the convertibility of the terms *equality* and *sameness*, I am at a loss to conjecture.

Note (G.) page 146.

In an Essay on Quantity, (by Dr. Reid) published in the Transactions of the Royal Society of London, for the year 1748, mathematics is very correctly defined to be "the doctrine of measure."—"The object of this science," the author observes, "is commonly said to be *quantity;* in which case, quantity ought to be defined, *what may be measured.* Those who have defined quantity to be whatever is capable of more or less, have given too wide a notion of it, which has led some persons to apply mathematical reasoning to subjects that do not admit of it."[†] The appropriate objects of this science are therefore such things alone as admit not only of being increased and diminished, but of being multiplied and divided. In other words, the common quality which characterizes all of them is their *measurability*.

In the same Essay, Dr. Reid has illustrated, with much ingenuity, a distinction (hinted at by Aristotle[‡]) of quantity into proper and improper. "I call that," says he "proper quantity, which is measured by its own kind; or which, of its own nature is capable of being doubled or trebled, without taking in any quantity of a different kind as a measure of it. Thus a line is measured by known lines, as inches, feet, or miles; and the length of a foot being known, there can be no question about the length of two feet, or of any part or multiple of a foot. This known length, by being multiplied or divided, is sufficient to give us a distinct idea of any length whatsoever.

"Improper quantity is that which cannot be measured by its own kind, but to which we assign a measure in some proper quantity that is related to it. Thus velocity of motion, when we consider it by itself, cannot be measured. We may perceive one body to move faster, another slower, but we can perceive no proportion or ratio between their velocities, without taking in some quantity of another kind to measure them by. Having therefore observed, that by a greater velocity, a greater space is passed over in the same time, by a less velocity, a less space, and by an equal velocity, an equal space; we hence learn to measure velocity, by the space passed over in a given time, and to reckon it to be in exact proportion to that; and having once assigned this measure to it, we can then, and not till then, conceive one velocity exactly double, or triple, or in any proportion to another. We can then introduce it into mathematical reasoning, without danger of error or confusion; and may use it as a measure of other improper quantities.

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[*] *Τὰ πρὸς τὸ αὐτὸ τὸν αὐτὸν ἔχοντα λόγον, ἴσα ἀλλήλοις ἐστι.—Euc. Elem.* Lib. V. Prop. ix.

[†] In this remark, Dr. Reid, as appears from the title of his paper, had an eye to the abuse of mathematical language by Dr. Hutcheson, who had recently carried it so far as to exhibit algebraical formulas for ascertaining the moral merit or demerit of particular actions. (See his Inquiry into the Original of our Ideas of Beauty and Virtue.)

[‡] *Κυρίως δὲ Ποσὰ ταῦτα λέγεται μόνα, τὰ δὲ ἄλλα πάντα κατὰ συμβεβηκός· εἰς ταῦτα γὰρ ἀποβλέποντες, καὶ τὰ ἄλλα Ποσα λέγομεν.—Arist. Categ.* cap. vi. 17.

"All the proper quantities we know may, I think, be reduced to these four: extension, duration, number, and proportion.

"Velocity, the quantity of motion, density, elasticity, the *vis insita* and *impressa* the various kinds of centripetal forces, and the different orders of fluxions, are all improper quantities; which therefore ought not to be admitted into mathematical reasoning, without having a measure of them assigned.

"The measure of an improper quantity ought always to be included in the definition of it; for it is the giving it a measure that makes it a proper subject of mathematical reasoning. If all mathematicians had considered this, as carefully as Sir Isaac Newton has done, some trouble had been saved both to themselves and their readers. That great man, whose clear and comprehensive understanding appears even in his definitions, having frequent occasion to treat of such improper quantities, never fails to define them, so as to give a measure of them, either in proper quantities or such as had a known measure. See the definitions prefixed to his Principia."

With these important remarks I entirely agree, excepting only the enumeration here given of the different kinds of proper quantity, which is liable to obvious and insurmountable objections. It appears to me that, according to Reid's own definition, extension is the only proper quantity within the circle of our knowledge. Duration is manifestly not measured by duration, in the same manner as a line is measured by a line: but by some regulated motion, as that of the hand of a clock, or of the shadow on a sun-dial. In this respect it is precisely on the same footing with velocities and forces, all of them being measured, in the last result, by extension. As to number and proportion, it might be easily shown, that neither of them fall under the definition of quantity, in any sense of that word. In proof of this assertion (which may, at first sight, seem somewhat paradoxical) I have only to refer to the mathematical lectures of Dr. Barrow, and to some very judicious observations introduced by Dr. Clarke in his controversy with Leibnitz. It is remarkable, that, at the period when this essay was written, Dr. Reid should have been unacquainted with the speculations of these illustrious men on the same subject; but this detracts little from the merits of his memoir, which rests chiefly on the strictures it contains on the controversy between the Newtonians and Leibnitzians concerning the measure of forces.

Note (H.) page 147.

The following view of the relation between the theorems of pure geometry and their practical applications, strikes me as singularly happy and luminous; more especially the ingenious illustrations borrowed from the science of geometry itself.

"Les vérités que la géométrie démontre sur l'étendue, sont des vérités purement hypothétiques. Ces vérités cependant n'en sont pas moins utiles, eu égard aux conséquences pratiques qui en résultent. Il est aisé de le faire sentir par une comparaison tirée de la géométrie même. On connoit *dans cette science* des lignes courbes qui doivent s'approcher continuellement d'une ligne droite, sans la rencontrer jamais, et qui néanmoins, étant tracées sur le papier, se confondent sensiblement avec cette ligne droite au bout d'un assez petit espace. Il en est de même des propositions de géométrie; elles sont *la limite intellectuelle des vérités physiques*, le terme dont celles-ci peuvent approcher aussi près qu'on le desire, sans jamais y arriver exactement. Mais si les théorèmes mathématiques n'ont pas rigoureusement lieu dans la nature, ils servent du moins à résoudre, avec une précision suffisante pour la pratique, les différentes questions qu'on peut se proposer sur l'étendue. Dans l'univers il n'y a point de cercle parfait: mais plus un cercle approchera de l'être, plus il approchera des propriétés rigoureuses du cercle parfaite que la géométrie démontre; et il peut en approcher à un degré suffisant pour notre usage. Il en est de même des autres figures dont la géométrie détaille les propriétés. Pour démontrer en toute rigueur, les vérités relatives à la figure des corps, on est obligé de supposer dans cette figure une perfection arbitraire qui n'y sauroit être. En effet, si le cercle, par exemple, n'est pas supposé rigoureux, il faudra autant de théorèmes différens sur le cercle qu'on imaginera de figures différentes plus ou moins approchantes du cercle parfait; et ces figures elles-mêmes pourront encore être absolument hypothétiques, et n'avoir point de modèle existant dans la nature. Les lignes qu'on considère dans la géométrie usuelle, ne sont ni parfaitement droits ni parfaitement courbes; les surfaces ne sont ni parfaitement planes ni parfaitement curvilignes; mais il est nécessaire de les supposer telles, pour arriver à des vérités fixes et déterminées, dont on puisse faire ensuite l'application plus ou moins exacte aux lignes et aux surfaces physiques."—D'Alembert, *Elémens de Philosophie*, Article *Géométrie*.

Note (I.) page 160.

From some expressions in this quotation, it would seem that the writer considered it as now established by mathematical demonstration, not only that a provision is made for maintaining the order and the stability of the solar system; but that after certain periods, all the changes arising from the mutual actions of the planets, begin again to be repeated over in an invariable and eternal *round;* or rather that all this is the result of the *necessary* properties of matter and of motion. So completely unfounded is this assumption in point of fact, that the astronomical discovery in question affords not the slightest analogical presumption in favor of a *moral cycle;* even on the supposition, that the actions of the human race, and the motions of the globe which they inhabit, were both equally subjected to the laws of mechanism.

I shall avail myself of this opportunity to remark further, that notwithstanding the lustre thrown by the result of La Grange's investigations on the metaphysical reasoning of Leibnitz against the *manus emendatrix* of Newton,—this reasoning, when we consider the vagueness of the abstract principles on which it rests, can be regarded in no other light than as a fortunate conjecture on a subject where he had neither experience nor analogy for a guide. The following argument is not ill-stated by Voltaire; and, in my opinion, is more plausible than any thing alleged *a priori*, on the other side of the question, by Leibnitz. "Il est trop clair par l'expérience que Dieu a fait des machines pour être détruites. Nous sommes l'ouvrage de sa sagesse; et nous périssons. Pourquoi n'en seroit-il pas de même du monde; Leibnitz veut que ce monde soit parfait; mais si Dieu ne l'a formé que pour durer un certain tems, sa perfection consiste alors à ne durer que jusqu'à l'instant fixé pour sa dissolution." *Voltaire's Account of Newton's Philosophy*.

From some excellent observations on these opposite conjectures of Leibnitz and of Newton, see Edinburgh Review, Vol. XIV. pp. 80, 81.

The quotation which gave occasion to the foregoing strictures induces me to add, before concluding this note, that when we speak of La Grange's *Demonstration* of the stability of the Solar System, it is by no means to be understood that he has proved by mathematical reasoning, that this system never *will*, nor ever *can* come to an end. The amount of his truly sublime discovery is, that the system does *not*, as Newton imagined, contain within itself, like the workmanship of mortal hands, the elements of its own decay; and that, therefore, its final dissolution is to be looked for, not from the operation of physical causes subjected to the calculations of astronomers, but from the will of that Almighty Being, by whose *fiat* it was at first called into existence. That this stability is a *necessary* consequence of the general laws by which we find the system to be governed, may, indeed, be assumed as a demonstrated proposition; but it must always be remembered, that *this necessity is only hypothetical or conditional*, being itself dependent on the continuance of laws which may at pleasure be altered or suspended.

The whole of the argument in the text, on the permanence or stability of the order of nature, is manifestly to be understood with similar restrictions. It relates, not to necessary but to probable truths; not to conclusions syllogistically deduced from abstract principles, but to *future contingences*, which we are determined to *expect* by a fundamental Law of Belief, adapted to the present scene of our speculations and actions.

Note (K.) page 165.

"The power of designating an individual object by an appropriate articulation, is a necessary step in the formation of language, but very far removed indeed from its consummation. Without the use of general signs, the speech of man would differ little from that of brutes; and the transition to the general term from the name of the individual, is a difficulty which remains still to be surmounted. Condillac, indeed, proposes to show, how this transition may be made in the natural course of things. 'Un enfant appelle du nom d'*arbre* le premier arbre que nous lui montrons. Un second arbre qu'il voit ensuite lui rappelle la même idée; il lui donne le même nom: de même à un troisème, à un quatrième, et voilà le mot d'*arbre*, donné d'abord à un individu, qui devient pour lui un nom de classe ou de genre, une idée abstraite qui comprend tous les arbres en général.' In like manner, Mr. Adam Smith, in his *Dissertation on the Origin of Languages*, and Mr. Dugald Stewart, in his *Elements of the Philosophy of the Human Mind*, endeavor to explain this process, by representing those words which were originally used as the proper names of individuals, to be successively transferred to other individuals, until at length each of them became insensibly the common name of a multitude. This, however, is more ingenious than solid. The name given to an individual, being intended exclusively to designate that individual, it is a direct subversion of its very nature and design, to apply it to any other individual, known to be different from the former. The child, it is true, may give the name of *father* to an individual like to the person it has been taught to call by that name: but this is from mistake, not from design; from a confusion of the two as the same person, and not from a perception of resemblance between them whilst known to be different. In truth, they whose thoughts are occupied solely about individual objects, must be the more careful to distinguish them from each other; and accordingly, the child will most peremptorily retract the appellation of *father*, so soon as the distinctness is observed.* The object with those whose terms or signs refer only to individuals, must naturally be to take care, that every such term or sign shall be applied to its appropriate individual, and to none else. Resemblance can produce no other effect, than to enforce a greater caution in the application of the particular names, and therefore has no natural tendency to lead the mind to the use of general terms." (Discourses and Dissertations on the Scriptural Doctrines of Atonement and Sacrifice. By William Magee, D. D. Senior Fellow of Trinity College, and Professor of Mathematics in the University of Dublin. Vol. II. pp. 63, 64. 3d Edit.)

The observations in pp. 164, 165, &c. of this volume, (to which I must request the attention of my readers before they proceed to the following remarks,) appear to me to weaken considerably the force of this reasoning, as far as it applies to the *substance* of the theory in question. With respect to *Mr. Smith's illustration*, drawn from the *accident* of a child's calling a stranger by the name of *father*, I readily acknowledge that it was unluckily chosen; and I perfectly assent to the strictures bestowed on it by Dr. Magee. In consequence of the habitual intercourse which this domestic relation naturally keeps up between the parties, the *mistake* of the child (as Dr. Magee very properly calls it) must, of course, be immediately corrected; and therefore the example is of no use whatever in confirming the conclusion it is brought to support. It is to be regretted that, upon this occasion, Mr. Smith should not only have appealed to a period of infancy, when the notions of similarity, and of identity cannot fail to be sometimes one and the same; but should have assumed as a general fact, an accidental occurrence, which, if it ever has happened, may be justly regarded as an exception to the usual history of the species. While yet on the breast, a child is able to distinguish, with the utmost quickness and accuracy, between the face of an acquaintance and that of a stranger; and, when it is so far advanced as to begin to utter articulate sounds, any tendency to transfer or to generalize the words *mother* or *nurse* seems scarcely conceivable. We are apt to suppose *that the* first attempts towards speech are coëval with the study of language; whereas the fact manifestly is, that these attempts are only the consequences of the progress previously and silently made in the interpretation of words. Long before this time, many of the logical difficulties which appear so puzzling to the speculative grammarian have been completely surmounted.†

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* These remarks have a particular reference to the following sentence in Mr. Smith's Dissertation: "A child that is just learning to speak calls every person who comes to the house its *papa* or its *mama*; and thus bestows upon the whole species those names which it had been taught to apply to two individuals."

† The general fact with respect to children, assumed by Mr. Smith in the foregoing note, is stated still more strongly by Aristotle. Both of these philosophers have, I suspect, trusted more, in this instance, to theory than to observation. Καὶ τὰ παιδία τὸ μὲν πρῶτον προσαγορεύει πάντας τοὺς ἄνδρας, πατέρας· καὶ μητέρας, τὰς γυναῖκας· ὕστερον δὲ διορίζει τούτων ἑκάτερον. "Ac pueri quoque primum omnes viros appellant patres, et omnes mulieres, matres: postea vero discernunt horum utrumque."—*Arist. Nat. Ausc.* Lib. 1. Cap. l.

This passage (which I do not recollect to have seen quoted by any former writer) does honor to Aristotle's acuteness. The *fact*, indeed, asserted in it, is more than questionable; but, ad-

But although this particular example has been ill chosen, it does not therefore follow that the author's theory is altogether unfounded. Whoever has paid any attention to the phenomena of the infant mind, must be satisfied of its strong bias in the first developement of the intellectual powers, to apply to similar objects a common name, without ever thinking of confounding them together. Nor does this hold merely with respect to similar *objects:* it holds also (and at a surprisingly early period of life) with respect to similar *relations.* A child who has been accustomed to the constant attentions and caresses of its mother, when it sees another child in the arms of its nurse, will naturally and infallibly call the nurse the child's mother. In this instance, as in numberless others, its error arises from generalizing too hastily;—the distinction between the meanings of the two relative words *mother* and *nurse* being too complex to be comprehended, till the power of observation begins to be exercised with some degree of attention and accuracy. This disposition, however, to transfer names from one thing to another, the diversity of which is obvious even to sense, certainly affords no inconsiderable an argument in favor of the opinion disputed by Dr. Magee.

It is, indeed, wonderful, how readily children transfer or generalize the name of the *maternal relation* (*that* which of all others must necessarily impress their minds most strongly) not only in the case of their own species, but of the lower animals; applying with little or no aid from instruction, the word *mother* to the hen, the sheep, or the cow, whom they see employed in nurturing and cherishing their young.

To myself, I own, it appears, that the theory of Condillac and Smith on this point, is confirmed by every thing I have been able to observe of children. Even generic terms will be found on examination, if I be not much deceived, to be originally understood by them merely as *proper names;* insomuch that the notions annexed by an infant to the words denoting the different articles of its nursery-furniture, or the little toys collected for its amusement, are, in its conceptions, as individually and exclusively appropriated as the names of its father, mother, or nurse. If this observation be well-founded, the same gradual conversion of proper names into appellatives, which Mr. Smith supposes to have taken place in the formation of a language, is exemplified in the history of every infant while learning to interpret its mother tongue. The case is nearly the same with the peasant, who has never seen but one town, one lake, or one river. All of these appellatives are to his ear, precisely equivalent to so many proper names.

"Quo te, Moeri, pedes? An, quo via ducit, in Urbem?"

That resemblance is one of our most powerful associating principles will not be disputed; and that, even in the maturity of our reason, we have a natural disposition to generalize the meaning of signs, in consequence of apprehended similarities, both of *things* and of *relations,* is equally certain. Why then should it be apprehended, that there is any peculiar mystery connected with this step in the commencement of the progress, when it seems to admit of an explanation so satisfactory, from a law of the human mind, exemplified daily in facts falling within the circle of our own experience?

Note (L.) page 184.

"Aristotle's rules are illustrated, or rather, in my opinion, *purposely darkened,* by putting letters of the alphabet for the several terms."—*Reid's Analysis of Aristotle's Logic.*

On this remark the following criticism has been made by Dr. Gillies:

"In the First Analytics, Aristotle shows, what is that arrangement of terms in each proposition, and that arrangement of propositions in each syllogism, which constitutes a necessary connexion between the premises and the conclusion. When this connexion takes place, the syllogism is perfect in point of form; and when the form is perfect, the conclusion necessarily follows from the premises, whatever be the signification of the terms of which they are composed. These terms, therefore, he commonly expresses by the letters of the alphabet, for the purpose of showing that our assent to the conclusion results, not from comparing the things signified, but merely from considering the relation which the signs (whether words or letters) bear to each other. Those, therefore, totally misconceive the meaning of Aristotle's logic, who think that, by employing letters instead of words,

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mitting the fact to be true, it must be owned that Aristotle has viewed it in a juster light than Mr. Smith;—not as an instance of any disposition to generalize proper names, but merely of imperfect and undistinguishing perception.

he has *darkened* the subject; since the more abstract and general his signs are, they must be the better adapted to show, that the inference results from considering them alone, without at all regarding the things which they signify." *

With the doctrine stated in the beginning of this extract I entirely agree. It coincides, indeed, remarkably with a passage in the former volume of this work, where I have shown, at some length, that our assent to the conclusion of a legitimate syllogism results not from comparing the things signified, but merely from considering the relations of the signs; and, consequently, that letters of the alphabet might be substituted instead of verbal terms, without impairing the force of the argument. The observation appears to myself of considerable importance, when connected with the fundamental question *there* discussed, concerning the use of language as an instrument of thought; but, I own, I am at a loss to conceive how it should have been supposed to bear on the present subject. The only point at issue between Dr. Gillies and Dr. Reid is, whether the use of letters instead of words be, or be not, a useful expedient for facilitating the study of logic; and upon this, I apprehend, there can scarcely exist a diversity of opinion. No instance, I will venture to affirm, ever occurred of any hesitation in the mind of the merest novice about the conclusiveness of a legitimate syllogism, when illustrated by an example; but how difficult to explain to a person altogether unaccustomed to scholastic abstractions, the import and cogency of those symbolical demonstrations by which Aristotle has attempted to fortify the syllogistic theory!

The partiality of Dr. Gillies for this technical device has probably arisen, in part, from his supposing it to bear a much closer analogy than it does, in fact, to the algebraical art. Another very learned writer has proceeded on the same idea, when he observes, that "it should recommend the study of logic to mathematicians, that, in order to make his *demonstrations* universal, Aristotle uses letters as universal characters, standing for all kinds of terms or propositions."† It would be an idle waste of words to show, how very slight this analogy is, and how totally inapplicable to the question before us; amounting to little more than this, that, in both cases, the alphabet happens to be employed as a substitute for common language. An analogy much more in point, may be traced in the practice of designating by letters the different parties in a *hypothetical law-suit*:—a practice attended with no inconvenience, where these symbols only supply the *place* of proper names; but which would at once convert the simplest case into an ænigma, if they were to be employed (as they are by Aristotle) to denote, not merely individual existences, but the relations of general ideas.

While Dr. Gillies has thus exerted his ingenuity in defending the use made by Aristotle of letters instead of words, it is to be regretted, that he has said nothing about the motives which induced that philosopher, in disproving the illegitimate modes, to content himself with general references to such words as *bonum*, *habitus*, *prudentia*, upon which the student is left to his own *judgment*, in ringing the various changes necessary for the illustration of the theory. A more effectual contrivance could not easily have been thought of, for perplexing a subject, level, in itself, to the meanest capacity. In this respect, it answers the intended purpose still better than his alphabetical *formulæ*.

Note (M.) page 209.

As instances of what are called by logicians *fallaciæ in dictione*, a modern writer mentions the mistakes which may arise from confounding "*liber* Bacchus, et *liber* a servitute; *liber* codex, et *liber* cortex; *crevi* à cerno, et *crevi* à cresco; *infractus* participium ab *infringo*, et *infractus* compositum ab *in* et *fractus*, sensu plane contrario." He mentions also the danger of confounding the literal with the figurative sense of a word, as *vulpes* when applied to a quadruped, and to a man noted for cunning.—"Sic siquis arguat," he adds for the sake of illustration, "*stellam latrare, quia stella quædam Canis dicitur*, facile respondebitur captioso argumento, distinguendo varios sensus ejusdem vocis, indeque ostendendo syllogismi quatuor terminos (si sensum spectes) ubi tres saltem sono comparent."

To exemplify the *fallacia accentus*, the same writer warns us against confounding *hortus* and *ortus*; *hara* and *ara*; *malum* adjectivum, and *malum* pro pomo;

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* Analysis of Aristotle's Speculative Works, &c. by Dr. Gillies, Vol. I. p. 89. 2d Edit.
From a note at the foot of the page it appears, that the remarks just quoted from Reid gave occasion to the above strictures.

† Ancient Metaphysics, Vol. III. p. 51 of the Preface.

cervus and servus; *concilium* and consilium, &c. &c. The remedy against such fallacies, he gravely tells us, is to distinguish the words thus identified, so as to show that the syllogism consists of more than three terms. "Solvuntur distinguendo ea quæ confunduntur, indeque monstrando pluralitatem terminorum." He acknowledges, however, that fallacies of this sort are not likely to impose on a skilful logician. "Sed crassiores sunt hæ fallaciæ quam ut perito imponant."

I have purposely quoted these remarks, not from a mere schoolman, but from an author justly distinguished both by science and learning, Dr. Wallis of Oxford. They are taken, too, from a treatise written with the express view of adapting the logic commonly taught in our universities to the ordinary business of life; having a formal dedication prefixed to it to the Royal Society of London, then recently instituted. The subject is the same with that of the third Book of Locke's Essay, relating to the *abuse of words*, and the interval between the two publications was only two years. Yet how immense the space by which they are separated in the history of the Human Mind!

The concluding paragraph, however, of this very puerile chapter on sophisms, bears marks of a mind fitted for higher undertakings. I cannot deny myself the pleasure of transcribing it, and of pointing it out to those who may hereafter speculate upon the theory of wit, as not unworthy of their attention.

"Interim hic monendum duco; quod hæ *fallaciæ*, utcunque justam argumenti vim non habeant, apprime tamen commodæ sunt ad id omne quod *ingeniosum* vulgo dicimus: Ut sunt joci, facetiæ, dicteria, scommata, sarcasmi, retorsiones lepidæ, (*wit*, *raillery*, *repartee*.) Quippe hoc omne fundari solet in hujusmodi fallaciarum aliquâ. Nonnunquam allusio fit ad verborum sonos; nunc ad ambiguam vocum significationem; nunc ad dubiam syntaxin; nunc proverbialiter dici solita accommodantur sensu proprio, aut vice versâ: nunc aliud aperte dicitur, aliud clam insinuatur; saltem oblique insinuatur, quod non erat directo dicendum; nunc verba contrario sensu captantur, et retorquentur; nunc verisimile insinuatur ut verum, saltem ut suspectum; nunc de uno dicitur, quod, mutato nomine, de alio intellectum vellent; nunc ironice laudando vituperant; nunc objecta spicula respondendo declinantur, aut etiam (obliquata) alio diriguntur, forte sic ut auctorem feriant; et fere semper ex ambiguo luditur. Quæ quidem fallaciarum formulæ, si frigidæ sint crassæque, ridentur; si subtiliores arrident; si acutæ, titillant; si aculeatæ, pungunt."

Note (N.) page 224.

In the first volume of these Elements, I have endeavoured to trace the origin of that bias of the imagination, which has led men, in all ages of the world, to consider physical causes and effects as a series of successive events necessarily connected together, like the links of a metallic chain. (See Chap. i. Sect. 2.) So very strong is this bias, that, even in the present times, some of the most sagacious and cautious of Bacon's followers occasionally show a disposition to relapse into the figurative language of the multitude. "The chain of natural causes," says Dr. Reid, "has, not unfitly, been compared to a chain hanging down from heaven: A link that is discovered supports the links below it, but it must itself be supported; and that which supports it must be supported, until we come to the first link, which is supported by the throne of the Almighty." *Essays on the Intellectual Powers*, p. 115. 4to. Ed. It is difficult to reconcile the approbation here bestowed on the above similitude, with the excellent and profound remarks on the relation of causes and effects which occur in the other parts of Dr. Reid's works. See *Essays on the Active Powers*, p. 44. and pp. 286, 287, 288. 4to. Edit.

Mr. Maclaurin, in the concluding chapter of his Account of Newton's Discoveries, has still more explicitly lent the sanction of his name to this idea of a chain of second causes. "As we cannot but conceive the universe as depending on the first cause and chief mover, whom it would be absurd, not to say impious, to exclude from acting in it; so we have some hints of the manner in which he operates in nature, from the laws which we find established in it. Though he is the source of all efficacy, yet we find that place is left for *second causes*, to act in subordination to him; and mechanism has its share in carrying on the great scheme of nature. The establishing the equality of action and re-action, even in those powers which seem to surpass mechanism, and to be more immediately derived from him, seems to be an indication that those powers, while they derive their efficacy from him, are, however, in a certain degree circumscribed and regulated in their operations by mechanical principles; and that they are not to be considered as *mere immediate volitions of his*, (as they are often represented,) but rather as instruments made by him, to perform the purposes for which he intended them. If, for example, the most noble phenomena in nature be produced by a rare elastic *atherial medium*, as Sir Isaac Newton conjectured, the whole efficacy of this medium must be resolved into his power and will who is the supreme cause. This, however, does not hinder, but that the same medium may be subject to the like laws as other elastic fluids, in its actions and vibrations; and that, if its nature were better known to us, we might make curious and useful discoveries concerning its effects from these laws. It is easy to see, that this conjecture no way derogates from the government and influences of the Deity; while it leaves us at liberty to pursue our inquiries concerning the nature and operations of such a medium: *Whereas they who hastily resolve these powers into immediate volitions of the Supreme Cause, without admitting any intermediate instruments, put an end to our inquiries at once; and deprive us of what is probably the most sublime part of philosophy, by representing it as imaginary and fictitious.*"

On the merits of this passage, considered in relation to the evidences of natural religion, I do not mean to offer any remarks here. Some acute strictures upon it in this point of view (but expressed with a most unbecoming and offensive petulance) may be found in the third volume of Baxter's Inquiry into the Human Soul.—It is with the *logical* proposition alone, stated in the concluding sentence, that we are concerned at present; and *this* (although Baxter has passed it over without any animadversion) appears to me highly exceptionable; proceeding on a very inaccurate, or rather totally erroneous conception of the object and aim of physical science. From the sequel of the section to which this note refers, (particularly from pages 228, 229, 230,) I trust it will appear, that, supposing all the phenomena of the universe to be produced by *the immediate volitions of the Supreme Cause*, the business of natural philosophers would be precisely the same as upon the hypothesis adopted by Maclaurin; the investigation of the *necessary connexions* linking together physical causes and effects, (if any such necessary connexions *do exist*,) being confessedly placed beyond the reach of our faculties; and, of consequence, our most successful *researches terminating* in the discovery of some general law, or in the farther generalization and simplification of laws already known. In this intellectual process there is no more reason to apprehend that any limit is fixed to our inquiries, than that the future progress of geometry should be stopped by the discovery of some one truth comprising the whole science in a single theorem.

Nor do I apprehend that the theory which excludes from the universe *mechanism* (strictly so called) tends, in the smallest degree, to detract from its beauty and grandeur; notwithstanding the popular and much admired argument of Mr. Boyle in support of this idea. "As it more recommends," he observes, "the skill of an engineer to contrive an elaborate engine, so as that there need nothing to reach his ends in it, but the contrivance of parts void of understanding; than if it were necessary that, ever and anon, a discreet servant should be employed to concur notably to the operations of this or that part, or to hinder the engine from being out of order: so it more sets off the wisdom of God, in the fabric of the universe, that he can make so vast a machine perform all those many things which he designed it should, by the mere contrivance of brute-matter, managed by certain laws of motion, and upheld by his ordinary and general concourse; than if he employed, from time to time, an intelligent overseer to regulate and control the motion of the parts."*—"What may be the opinion of others," says Lord Kames, after quoting the foregoing passage, "I cannot say; but to me this argument is perfectly conclusive. Considering this universe as a great machine, the workmanship of an intelligent cause, I cannot avoid thinking it the more complete, the less mending or interposition it requires. The perfection of every piece of workmanship, human and divine, consists in its answering the designed purpose, without bestowing further labor upon it."†—To myself, I must confess, Mr. Boyle's argument appears altogether unworthy of its author. The avowed use of a *machine* is to save labor; and therefore, the less frequently the interposition of the artist is necessary, the more completely does the machine accomplish the purpose for which it was made. These ideas surely do not apply to the works of the Almighty. The multiplicity of his operations neither distract his attention, nor exhaust his power; nor can we, without an obvious inconsistency in the very terms of the proposition, suppose him reduced to the necessity of economizing, by means of mechanism, the resources of Omnipotence.[*]

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* Inquiry into the vulgar notion of Nature.

† Of the Laws of Motion. Published in the First Volume of the Physical and Literary Essays, read before the Edinburgh Philosophical Society, (1754.)

My object in these observations (I think it proper once more to remind my readers) is not to prejudge the metaphysical question between Maclaurin and Baxter; but merely to establish the two following propositions. 1. That this question is altogether foreign to the principles which form the basis of the inductive logic; these principles neither affirming nor denying the existence of necessary connexions between physical causes and effects, but only asserting, that such connexions, if they do exist, are not objects of human knowledge. 2. That no presumption in favor of their existence is afforded by Mr. Boyle's similitude; the reasoning founded on the supposed analogy between the universe and a machine, being manifestly inapplicable where the *power* as well as the skill of the Contriver is admitted to be infinite.—If the remarks offered on these points be well founded, they may serve, at the same time, to show, that the attempt made in the text to illustrate some abstract topics connected with the received Rules of Philosophizing was not altogether superfluous.

The metaphysical doctrine maintained by Baxter in opposition to Maclaurin, seems to coincide nearly with Malebranche's Theory of *Occasional Causes*, as well as with the theology of the old Orphic verses quoted in the 7th chapter of Aristotle's Treatise *de Mundo*.—A very striking resemblance is observable between these verses, and the Hymn to Narrayna or the Spirit of God, translated by Sir William Jones from the writings of ancient Hindu Poets.[†]

Note (O.) page 237.

Although Dr. Reid was plainly led into this train of thinking by Mr. Hume, the same doctrine with respect to the relation of *cause* and *effect*, (considered as the object of physical science,) is to be found in many English writers of a far earlier date. Of this assertion I have produced various proofs in my first Volume, from Hobbes, Barrow, Berkeley, and others, to whose speculations on this head Dr. Reid does not seem to have paid any attention. To these quotations I beg leave to add the following, from a book, of which the *third* edition was published in 1737.

"Here it is worth observing, that all the real true knowledge we have of nature is entirely *experimental;* insomuch, that how strange soever the assertion seems, we may lay this down as the first fundamental unerring rule in physics, *that it is not within the compass of human understanding, to assign a purely speculative reason for any one phenomenon in nature;* as why grass is green, or snow is white; why fire burns, or cold congeals. By a *speculative reason*, I mean assigning an immediate *efficient cause a priori*, together with the manner of its operation, for any effect whatsoever purely natural. We find, indeed, by observation and experience, that such and such effects *are* produced; but when we attempt to think of the reason *why*, and the manner *how* the causes work those effects, then we are at a stand, and all our reasoning is precarious, or at best but probable conjecture.

"If any man is surprised at this, let him instance, in some speculative reason he can give for any natural phenomenon; and how plausible soever it appears to him at first, he will, upon weighing it thoroughly, find it at last resolved into nothing more than mere observation and experiment, and will perceive that these expressions generally used to describe the *cause* or manner of the productions of nature, do really signify nothing more than the *effects*." *The Procedure, Extents, and Limits of Human Understanding.* Ascribed to Dr. Peter Brown, Bishop of Cork. (London, 1737. 3d Ed.)

For the following very curious extracts, (together with many others of a similar import, both from English and from foreign writers,) I am indebted to a learned correspondent, William Dickson, LL. D., a gentleman well known by his able and meritorious exertions for the abolition of the slave trade.

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[*] A comparison still more absurd than that of Mr. Boyle occurs in the 6th Chapter of Aristotle's book *de Mundo*; where he represents it as unbecoming the *dignity* of the Supreme Being αὐτουργεῖν ἅπαντα,—"to put his own hand to every thing;" a supposition according to him, "much more unsuitable to the Divine majesty, than to conceive a great monarch like Xerxes taking upon himself the actual execution of all his own decrees."

[†] The same opinion is explicitly avowed by Dr. Clarke, a zealous partisan of the Experimental Philosophy, and one of the ablest logicians that the Newtonian School has hitherto produced. "The course of nature, truly and properly speaking, is nothing but the will of God, *producing certain effects in a continued, regular, constant, and uniform manner.*"—*Clarke's Works*, Vol. II. p. 698. Fol. edit.

"Confidence of *science* is one great reason we miss it: for on this account presuming we have it every where, we seek it not where it is; and, therefore, fall short of the object of our inquiry. Now, to give further check to *dogmatical* pretensions, and to discover the vanity of assuming ignorance, we'll make a short inquiry, whether there be any such thing as *science* in the sense of its asserters. In their notion, then, *it is the knowledge of things in their true, immediate, necessary causes:* Upon this I'll advance the following observations.

"1. All knowledge of causes is deductive; for we know none by simple intuition, but through the mediation of their effects. So that we cannot conclude any thing to be the cause of another, but from its continual accompanying it; for the causality itself is insensible. But now to argue from a concomitancy to a causality is not infallibly conclusive; yea, in this way lies notorious *delusion*, &c. &c. &c.

"2. We hold no *demonstration* in the notion of the dogmatist, but where the contrary is impossible:" &c. &c. (*Scepsis Scientifica:* or Confess't Ignorance the Way to Science; in an Essay of the Vanity of Dogmatizing and Confident Opinion; with a Reply to the Exceptions of the learned *Thomas Albius.** By Joseph Glanvill, M. A. London, 1665. Dedicated to the Royal Society.)

"*Causalities* are first found out by *concomitancy*, as I intimated. And our experience of the dependence of one, and independence of the other, shows which is the effect, and which the cause. Definitions cannot discover causalities, for they are formed after the causality is known. So that, in our author's instance, a man cannot know heat to be the atoms of fire, till the concomitancy be known, and the efficiency first presumed. The question is, then, How *heat* is known to be the effect of *fire*? Our author answers by its definition. But how came it to be so defined? The answer must be, by the concomitancy and dependence, for there's nothing else assignable." (SCIR$\frac{\text{E}}{\text{I}}$ tuum nihil est; or the Author's Defence of the vanity of Dogmatizing against the Exceptions of the learned *Thomas Albius*, in his late SCIRI. London, 1665.) . . . .

"Inter causam propriè dictam et effectum oportet esse necessarium nexum; adeo ut positâ actione causæ sequatur necessario effectus. Cum Deus vult aliquid efficere id necessario eveniat oportet, &c. Quia autem ejusmodi nexus non cernitur inter causas creatas et effectus, nonnulli causas secundas, seu creatas, suâ vi agere negârunt. Negant corpora a corporibus moveri, quod inter motum corporis, et motum eorum in quæ incidit, nullus deprehendatur nexus, adeo ut moto corpore A, necesse sit moveri corpus B, cui colliditur. Iidem quoque negant corpora a spiritibus moveri, quia inter voluntatem spirituum et motum corporum nullam connexionem animadvertunt, &c. Fatendum a nobis hujusmodi connexum nullum cerni, nec sequi ex eo quod, corpore moto, id, in quod incidit, movetur; aut ex eo quod, mente volente, corpus agitatur, corpora et mentem esse veras motûs causas. Fieri posset, ut occasiones tantum essent, quibus positis, alia causa ageret. Verum uti, ex ejusmodi possibilitate, non colligeris rem ita se habere; ita ne eò quod non adsequeris aliquid, consequens est ut nihil sit; nisi aliunde probaveris tibi esse earum rerum, de quibus agitur, adæquatam ideam, aut rem repugnare, &c.—Possunt inesse corporibus *motis, et spiritibus*, facultates ignotæ, de quibus judicium nullum, aut negando aut affirmando, ferre possumus. Itaque ex æquo peccant, qui affirmant inesse iis certò facultates efficiendorum quorundam, quæ an ab iis fiant ignorant; et qui negant quidquam inesse corporibus et spiritibus, nisi quod in iis perspicue nôrunt."—*Joannis Clerici Opera Philosophica.* Amstel. 1698. Ontol. T. I. p. 376.

After this cloud of authorities (many of which are from books in very general circulation,) it is surprising that the following sentence should have escaped the pen of Dr. Beattie. "The sea *has* ebbed and flowed twice every day in time past; therefore the sea *will continue* to ebb and flow twice every day in time to come,—is by no means a logical deduction of a conclusion from premises.—THIS REMARK WAS FIRST MADE BY MR. HUME."—*Essay on Truth*, 2d. ed. p. 126.

It is evident, that this remark is only a particular application of the doctrine contained in the above quotations; as well as in the numerous extracts to the same purpose, collected in Note (C.) at the end of the first Volume of this Work. In one of these (from Hobbes) the very same observation is made; and a sort of theory is proposed to explain *how* the mind is thus led to infer the *future* from the *past*:—a theory which, however unsatisfactory for its avowed purpose, is yet sufficient to show, that the author was fully aware, that our expectation of the continuance of the laws of Nature was a fact not to be accounted for from the received principles of the scholastic philosophy.

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* Or *White*, a Romish priest, author of a treatise entitled, Sciri sive Sceptices et Scepticorum a Jure Disputationis Exclusio. (See Biog. Diction.)

Note (P.) page 252.

From the Preface of Pappus Alexandrinus to the Seventh Book of his Mathematical Collection (See Halley's Version and Restitution of Apollonius Pergæus de Sectione Rationis et Spatii, p. xxviii.

. . . . "Resolutio est methodus, quâ à quæsito quasi jam concesso per ea quæ deinde consequuntur, ad conclusionem aliquam, cujus ope Compositio fiat, perducamur. In resolutione enim, quod quæritur ut jam factum supponentes, ex quo antecedente hoc consequatur expendimus; iterumque quodnam fuerit hujus antecedens; atque ita deinceps, usque dum in hunc modum regredientes, in aliquid jam cognitum locoque principii habitum incidamus. Atque hic processus Analysis vocatur, quasi dicas, inversa solutio. E contrario autem in Compositione, cognitum illud, in Resolutione ultimo loco acquisitum, ut jam factum præmittentes; et quæ ibi consequentia erant, hic ut antecedentia naturali ordine disponentes, atque inter se conferentes, tandem ad Constructionem quæsiti pervenimus. Hoc autem vocamus Synthesin. Duplex autem est Analyseos genus, vel enim est veri indagatrix, diciturque Theoretica; vel propositi investigatrix, ac Problematica vocatur. In Theoretico autem genere, quod quæritur, revera ita se habere supponentes, ac deinde per ea quæ consequuntur, quasi vera sint (ut sunt ex hypothesi) argumentantes; ad evidentem aliquam conclusionem procedimus. Jam si conclusio illa vera sit, vera quoque est propositio de quâ quæritur; ac demonstratio reciproce respondet analysi. Si vero in falsam conclusionem incidamus, falsum quoque erit de quo quæritur.[*] In Problematico vero genere, quod proponitur ut jam cognitum sistentes, per ea quæ exinde consequuntur tanquam vera, perducimur ad conclusionem aliquam: quod si conclusio illa possibilis sit ac ποριστὴ quod Mathematici *Datum* appellant; possibile quoque erit quod proponitur: et hic quoque demonstratio reciproce respondebit Analysi. Si vero incidamus in conclusionem impossibilem, erit etiam problema impossibile. Diorismus autem sive determinatio est quâ discernitur quibus conditionibus quotque modis problema effici possit. Atque hæc de Resolutione et Compositione dicta sunto."

Note (Q.) page 277.

The following passage from Buffon, although strongly marked with the author's characteristical spirit of system, is yet, I presume, sufficiently correct in the outline, to justify me for giving it a place in this note, as an illustration of what I have said in the text on the insensible gradations which fix the limits between resemblance and analogy.

"Take the skeleton of a man; incline the bones of the pelvis; shorten those of the thighs, legs, and arms; join the *phalanges* of the fingers and toes; lengthen the jaws by shortening the frontal bones; and lastly, extend the spine of the back. This skeleton would no longer represent that of a man; it would be the skeleton of a horse. For, by lengthening the back-bone and the jaws, the number of the vertebræ, ribs, and teeth, would be increased; and it is only by the numbers of these bones, and by the prolongation, contraction, and junction of others, that the skeleton of a horse differs from that of a man. The ribs, which are essential to the figure of animals, are found equally in man, in quadrupeds, in birds, in fishes, and even in the turtle. The foot of a horse, so apparently different from the hand of a man, is composed of similar bones, and, at the extremity of each finger, we have the same small bone resembling the shoe of a horse which bounds the foot of that animal. Raise the skeletons of quadrupeds, from the ape kind to the mouse, upon their hind legs, and compare them with the skeleton of a man; the mind will be instantly struck with the uniformity of structure observed in the formation of the whole group. This uniformity is so constant, and the gradations from one species to another are so imperceptible, that, to discover the marks of their discrimination, requires the most minute attention. Even the bones of the tail will make but a slight impression on the observer. The tail is only a prolongation of the *os coccygis* or rump bone, which is short in man. The orang outang and true apes have no tail, and in the baboon and several other quadrupeds its length is very inconsiderable. Thus, in the creation of animals, the Supreme Being seems to have employed only one great idea, and, at the same time, to have diversified it in every possible manner, that men might have an opportunity of admiring equally the magnificence of the execution and the simplicity of the design."—*Smellie's Translation.*

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[*] From the account given in the text of *Theoretical Analysis*, it would seem to follow, that its advantages, as a method of investigation, increase in proportion to the variety of demonstrations of which a theorem admits; and that, in the case of a theorem admitting of one demonstration alone, the two methods would be exactly on a level. The justness of this conclusion will, I believe, be found to correspond with the experience of every person conversant with the process of the Greek Geometry.

As a proof that the general conclusion in which the foregoing extract terminates, requires some important qualifications and restrictions, it is sufficient to subjoin a few remarks from a later writer, who, with the comprehensive views of Buffon, has combined a far greater degree of caution and correctness in his scientific details.

. . . . . . "It has been supposed by certain naturalists, that all beings may be placed in a series or scale, beginning with the most perfect, and terminating in the most simple; or in the one which possesses qualities the least numerous and most common, so that the mind, in passing along the scale from one being to another, shall be no where conscious of any chasm or interval, but proceed by gradations almost insensible. In reality, while we confine our attention within certain limits, and especially while we consider the organs separately, and trace them through animals of the same class only, we find them proceed, in their degradation, in the most uniform and regular manner, and often perceive a part, or vestige of a part, in animals where it is of no use, and where it seems to have been left by Nature, only that she might not transgress her general law of continuity.

"But, on the one hand, all the organs do not follow the same order in their degradation. *This organ is* at its highest state of perfection in one species of animals; *that* organ is most perfect in a *different species*, so that, if the species are to be arranged after each particular organ, there must be as *many scales or series* formed, as there are regulating organs assumed; and in order to construct a general scale of perfection, applicable to all beings, there must be a calculation made of the effect resulting from each particular combination of organs,—a calculation which, it is needless to add, is hardly practicable.

"On the other hand, these slight shades of difference, these insensible gradations continue to be observed, only while we confine ourselves to the same combinations of leading organs; only while we direct our attention to the same great central springs. Within these boundaries all animals appear to be formed on one common plan, which serves as the ground-work to all the lesser internal modifications; but the instant we pass to animals where the leading combinations are different, the whole of the resemblance ceases at once, and we cannot but be conscious of the abruptness of the transition.

"Whatever separate arrangements may be suitable for the two great classes of animals, with and without vertebræ, it will be impossible to place at the end of the one series and at the commencement of the *other, two animals* sufficiently resembling, to form a proper bond of connexion."—Introduction to *Cuvier's Leçons d'Anatomie Comparée.*

Note (R.) page 288.

Of fortunate conjectures or hypotheses concerning the laws of nature, many additional examples might be produced from the scientific history of the eighteenth century. Franklin's sagacious and confident anticipation of the identity of lightning and of electricity, is one of the most remarkable. The various analogies previously remarked between their respective phenomena, had become, at this period, so striking to philosophers, that the decisive experiment necessary to complete the theory, was carried into execution, in the course of the same month, on both sides of the Atlantic. In the circumstantial details recorded of that made in America, there is something peculiarly interesting. I transcribe them in the words of Dr. Priestley, who assures us that he received them from the best authority.

"After Franklin had published his method of verifying his hypothesis concerning the sameness of electricity with the matter of lightning, he was waiting for the erection of a spire in Philadelphia to carry his views into execution;

not imagining that a pointed rod, of a moderate height, could answer the purpose; when it occurred to him that, by means of a common kite, he could have a readier and better access to the regions of thunder, than by any spire whatever. Preparing, therefore, a large silk handkerchief and two cross sticks of a proper length on which to extend it, he took the opportunity of the first approaching thunder-storm to take a walk into a field in which there was a shed convenient for his purpose. But dreading the ridicule which too commonly attends unsuccessful attempts in science, he communicated his intended experiment to nobody but his son, who assisted him in raising the kite.

"The kite being raised, a considerable time elapsed before there was any appearance of its being electrified. One very promising cloud had passed over it without any effect; when at length, just as he was beginning to despair of his contrivance, he observed some loose threads of the hempen string to stand erect, and to avoid one another, just as if they had been suspended on a common conductor. Struck with this promising appearance, he immediately presented his knuckle to the key, and (let the reader judge of the exquisite pleasure he must have felt at that moment) the discovery was complete. He perceived a very evident electric spark. Others succeeded, even before the string was wet, so as to put the matter past all dispute; and when the rain had wet the string, he collected electric fire very copiously. This happened in June, 1752, a month after the electricians in France had verified the same theory, but before he heard of any thing they had done."—*Priestley's History of Electricity*, pp. 180, 181, 4to. ed.

Note (S.) page 292.

"Natural knowledge may not unaptly be compared to a vegetable, whether plant or tree, which springs from a seed sowed in a soil proper, and adapted by a skilful gardener for that plant. For as the seed, by small fibrills or roots it shoots out, receives from the soil or earth a nourishment proper and adapted for ascending into the body or stock, to make it grow in bulk and strength, to shoot upwards, and from thence to shoot forth branches, and from them leaves, thereby to draw and receive out of the air a more refined, spirituous, and enlivening juice, which, descending back into the body or stock, increases its stature, bulk, circumference, and strength, by new encirclings, and thereby enables it to send forth more fibrills and greater roots, which afford greater and more plentiful supplies to the stock or trunk, and enables that to exert and shoot forth more branchings and greater numbers of leaves; which, repeating all the effects and operations by continued and constant circulations, at length bring the plant to its full stature and perfection:

"So natural knowledge doth receive its first informations from the supplies afforded by select and proper phenomena of nature conveyed by the senses; these improve the understanding, and enable it to raise some branchings out into conclusions, corollaries, and maxims; these afford a nutritive and strengthening power to the understanding, and enable it to put forth new roots of inquisition, trials, observations, and experiments, and thereby to draw new supplies of information: which further strengthening the understanding, enable it to exert and produce new deductions and new axioms: These circulate and descend downwards, increasing and strengthening the judgment, and thereby enable it to make more striking out of roots of inquiries and experiments, which cause the like effects as before, but more powerfully, and so by consent and continued circulations from phenomena to make deductions, and from deductions to inquire phenomena, it brings the understanding to a complete and perfect comprehension of the matter at first proposed to be considered."—*Hooke's Posthumous Works*, p. 553.

Note (T.) page 294.

"Aliquando observationes et experimenta immediate nobis exhibent principia, quæ quærimus; sed aliquando etiam *hypotheses* in auxilium vocamus, non tamen penitus arbitrarias, sed conformes iis quæ observantur, et quæ supplentes immediatarum observationum defectum, viam investigationi sternunt, tanquam divinantibus; ut si ea, quæ ex ipsis deducuntur, inveniamus re ipsâ, eadem retineamus, et progrediamur ad nova consectaria; secus vero, ipsas rejiciamus. Et quidem plerumque hanc esse arbitror methodum omnium aptissimam in physicâ, quæ sæpissime est velut quædam enucleatio epistolæ arcanis notis conscriptæ, ubi per attentationem, et per errores etiam plurimos paulatim et caute progrediendo, ad veram ejus theoriam devenitur: cujus rei specimen admodum luculentum exhibui in meâ dissertatione de lumine, agens de rectilineâ luminis propagatione; ac in Stayanæ Philosophiæ Tomo I. agens de generalibus proprietatibus corporum, et de vi inertiæ in primis; Tomo vero II. agens de totius Astronomiæ constitutione."—*Boscovich de Solis ac Lunæ Defectibus.*

In Sprat's History of the Royal Society, a similar idea occurs, illustrated by an image equally fanciful and apposite. "It is not to be questioned, but many inventions of great moment have been brought forth by authors, who began upon suppositions, which afterwards they found to be untrue. And it frequently happens to philosophers, as it did to Columbus; who first believed the *clouds* that hovered about the Continent to be the firm *land*: But this mistake was happy; for, by sailing towards them, he was led to what he sought; so by prosecuting of mistaken causes, with a resolution of not giving over the pursuit, they have been guided to the truth itself."

[The work from which this passage is taken (it may be here remarked, by the way) affords complete evidence of the share which, in the judgment of the founders of the Royal Society, Bacon had in giving a beginning to experimental pursuits in England. See in particular, Section xvi.]

Note (U.) page 294.

With respect to the application of the method of *exclusions* to physics, an important logical remark is made by Newton, in one of his letters to Mr. Oldenburgh. Obvious and trivial as it may appear to some it has been overlooked by various writers of great name; and therefore I think proper to state it in Newton's own words.

"In the mean while, give me leave, Sir, to insinuate, that I cannot think it effectual for determining truth, to examine the several ways by which phenomena may be explained, *unless where there can be a perfect enumeration of all those ways.* You know the proper method for inquiring after the properties of things, is to deduce them from experiments. And I told you, that the theory which I propounded (concerning light and colors) was evinced to me, not by inferring, *it is thus, because it is not otherwise;* that is, not by deducing it only from a confutation of contrary suppositions, but by *deriving it from experiments* concluding positively and directly. The way, therefore, to examine it, is, by considering whether the experiments which I propound, do prove those parts of the theory to which they are applied; or by prosecuting other experiments which the theory may suggest for its examination," &c. &c. *Horsley's Edition of Newton's Works*, Vol. IV. p, 320.

Note (X.) page 299.

"If we consider the infantine state of our knowledge concerning vision, light, and colors, about a century ago, very great advancements will appear to have been made in this branch of science; and yet a philosopher of the present age has more *desiderata*, can start more difficulties and propose more new subjects of inquiry than even Alhazen or Lord Bacon. The reason is, that whenever a new property of any substance is discovered, it appears to have connexions with other properties, and other things, of which we could have no idea at all before, and which are by this means but imperfectly *announced to us. Indeed*, every *doubt* implies some degree of *knowledge;* and while nature is a field of such amazing, perhaps boundless extent, it may be expected that the more knowledge we gain, the more doubts and difficulties we shall have; but still, since every advance in knowledge is a real and valuable acquisition to mankind, in consequence of its enabling us to apply the powers of nature to render our situation in life more happy, we have reason to rejoice at every new difficulty that is started, because it informs us that more knowledge, and more advantage are yet unattained, and should serve to quicken our diligence in the pursuit of them. Every *desideratum* is an imperfect *discovery.*" *Priestley's History of Discoveries relating to Vision, Light, and Colors*, p. 773. (Lond. 1772.)

Note (Y.) page 310.

For the analogies between Galvanism and Electricity, see *Traité Elémentaire de Physique, par M. l'Abbé Haüy*, § 717.—The passage concludes with the following remark, which may be regarded as an additional proof, that, even when analogical conjectures appear to depart the most widely from the evidence of experience, it is from experience that they derive their whole authority over the

belief. "Partout le fluid électrique semble se multiplier par la diversité des phenomènes; et il nous avait tellement accoutumés à ses métamorphoses, que la nouveauté même de la forme sous laquelle il s'offrait dans le Galvanisme naissant, semblait être une raison de plus pour le reconnaitre."

Note (Z.) page 318.

In that branch of politics which relates to the theory of Government, one source of error (not unfrequently overlooked by the advocates for experience) arises from the vagueness of the language in which political facts are necessarily stated by the most faithful and correct historians. No better instance of this can be produced than the terms, *monarchy*, *aristocracy*, and *democracy* commonly employed to distinguish different forms of Government from each other. These words, in their strict philosophical acceptation, obviously denote not *actual* but *ideal* constitutions, existing only in the imagination of the political theorist; while, in more popular discourse, they are used to discriminate, according to their prevailing bias or spirit, the various mixed establishments exemplified in the history of human affairs. Polybius, accordingly, with his usual discernment, expresses his doubts, under which of the three simple forms the constitution of Rome, at the period when he had an opportunity of studying it, ought to be classed. "When we contemplate," he observes, "the power of the Consuls, it seems to be a monarchy; when we attend to the power of the Senate, it seems to be an aristocracy; when we attend to the power of the People, we are ready to pronounce it a democracy."[*]

It is easy to see how much this scantiness and want of precision in our political vocabulary, must contribute to mislead the judgments of those reasoners who do not analyze very accurately the notions annexed to their words; and at the same time, what a purchase they afford to the sophistry of such writers as are disposed, in declamations addressed to the multitude, to take an undue advantage of the ambiguities of language.

Another source of error which goes far to invalidate the authority of various political maxims supposed to be founded on *experience*, is the infinite multiplicity of the seemingly trifling and evanescent causes connected with local manners and habits, which, in their joint result, modify, and in some cases counteract so powerfully, the effects of written laws and of established forms. Of these causes no verbal description can convey an adequate idea; nor is it always possible, even for the most attentive and sagacious observer, when the facts are before his eyes, to appreciate all their force:—So difficult is it to seize the nicer shades which distinguish the meanings of corresponding terms in different languages; and to enter, at years of maturity, into those delicate and complex associations, which, in the mind of a well-educated native, are identified with the indigenous feelings of national sympathy and taste.

Of the truth of this remark, a striking illustration presents itself in the mutual ignorance of the French and English nations (separated from each other by a very narrow channel, and, for centuries past, enjoying so many opportunities of the most familiar intercourse) with respect to the real import of the words and phrases marking the analogous gradations of rank in the two countries. The words *gentilhomme* and *gentleman* are both derived from the same etymological root: yet how imperfect a translation does the one afford of the other! and how impossible to convey by a definition all that is implied in either! Among French writers of no inconsiderable name, we meet with reasonings which plainly show that they considered the relative rank of the members of our two Houses of

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[*] This observation of Polybius has been very unjustly censured by Grotius. "Sed neque Polybii hic utor auctoritate, qui ad mixtum genus reipublicæ refert Romanam rempublicam, quæ illo tempore, si non *actiones ipsas*, sed *jus agendi* respicimus, mere fuit popularis: Nam et senatus auctoritas, quam ad optimatum regimen refert, et consulum quos quasi reges fuisse vult, subdita erat populo. Idem de aliorum politica scribentium sententiis dictum volo, qui magis externam speciem et quotidianam administrationem, quam jus ipsum summi imperii spectare congruens ducunt suo instituto."—(De Jure Belli ac Pacis, Lib. I. Cap. 3.) In reply to this criticism, it is sufficient to remark, that Polybius is not here speaking of the *theory* of the Roman constitution, (about which there could be no diversity of opinion,) but of what common observers are so apt to overlook,—*the actual state of that constitution*, modified as it was by time, and chance, and experience.—Among the numerous commentators on Grotius, I recollect one only (Henry de Cocceii) who has viewed this question in its proper light. "Auctor inter eos, qui circa formas imperii falluntur, etiam Polybium refert, qui rempublicam Romanam suis temporibus mixtam fuisse ait. At bene notandum, Polybium non loqui de mixturâ *status* sed *administrationis*: forma enim reipublicæ erat mere popularis, sed administratio divisa fuit inter consules, senatum, et populum."

Parliament, as something similar to what is expressed in their own language by the words *noble* and *roturier*;—while others, puzzled with the inexplicable phenomena occasionally arising from the boundless field of ambition opened in this fortunate island to every species of industry and of enterprise, have been led to conclude, that birth has, among us, no other value than what it derives from the privileges secured by the constitution to our hereditary legislators. Few perhaps but the natives of Great Britain are fully aware, how very remote from the truth are both these suppositions.

I transcribe the following passage from an article in the French *Encyclopédie*; written by an author of some distinction both for talents and learning; and which, it is not impossible, may be quoted at some future period in the history of the world, as an authentic document with respect to the state of English society in the eighteenth century. The writer had certainly much better access to information than was enjoyed by those to whom we are indebted for our experimental knowledge of the ancient systems of policy.

"En Angleterre, la loi des successions attribue aux aînés dans les familles nobles les biens immeubles, à l'exclusion des cadets qui n'y ont aucune part. Ces cadets sans bien cherchent à réparer leurs pertes dans l'exercice du négoce, et c'est pour eux un moyen presque sur de s'enrichir. Devenus riches, ils quittent la profession, ou même sans la quitter, leurs enfans rentrent dans tous les droits de la noblesse de leur famille; leurs aînés prennent le titre de *milord* si leur naissance et la possession d'une terre pairie le leur permettent.—Il faut néanmoins remarquer, que quelque fière que soit la noblesse Angloise, lorsque les nobles entrent en apprentissage, qui selon les réglemens doit être de sept ans entiers, jamais ils ne se couvrent devant leurs maîtres, leur parlant et travaillant tête nue, quoique souvent le maître soit roturier et de race marchande, et que les apprentifs soient de la première noblesse."—*Encyclop. Méthod. Commerce*, Tom. 3. Article *Noblesse*.

Note (AA.) page 325.

"Metaphysicæ pars secunda est finalium causarum inquisitio, quam non ut prætermissam, sed ut male collocatam notamus. Solent *enim inquiri inter* physica non inter metaphysica. Quanquam si ordinis hoc solum vitium esset, non mihi fuerit tanti. Ordo enim ad illustrationem pertinet, neque est ex substantiâ scientiarum. At hæc ordinis inversio defectum insignem peperit, et maximam philosophiæ induxit calamitatem. Tractatio enim causarum finalium in physicis, inquisitionem causarum physicarum expulit et dejecit, effecitque ut homines in istiusmodi speciosis et umbratilibus causis acquiescerent, nec inquisitionem causarum realium, et vere physicarum, strenue urgerent, ingenti scientiarum detrimento. Etenim reperio hoc factum esse non solum a Platone, qui in hoc *littore* semper anchoram figit, verum etiam ab Aristotele, Galeno, et aliis, qui sæpissime etiam ad illa vada impingunt. Etenim qui causas adduxerit hujusmodi, *palpebras cum pilis pro sepi et vallo esse, ad munimentum oculorum*: Aut *corium in animalibus firmitudinem esse ad propellendos calores et frigora*: Aut *ossa pro columnis et trabibus a naturâ induci, quibus fabrica corporis innitatur*: Aut *folia arborum emitti, quo fructus minus patiantur a sole et vento*: Aut *nubes in sublimi fieri, ut terram imbribus irrigent*: *Aut terram densari et solidari, ut statio et mansio sit animalium*: et alia similia: Is in metaphysicis non male ista allegârit; in physicis autem nequaquam. Imo, quod cœpimus dicere, hujusmodi sermonum discursus (instar remorarum, uti fingunt, navibus adhærentium) scientiarum quasi velificationem et progressum retardârunt, ne cursum suum tenerent, et ulterius progrederentur: et jampridem effecerunt, ut physicarum causarum inquisitio neglecta deficeret, ac silentio præteriretur. Quapropter philosophia naturalis Democriti, et aliorum, qui Deum et mentem a fabricâ rerum amoverunt; et structuram universi infinitis naturæ prælusionibus et tentamentis (quas uno nomine *fatum* aut *fortunam* vocabant) attribuerunt; et rerum particularium causas, materiæ necessitati, sine intermixtione causarum finalium, assignârunt; nobis videtur, quatenus ad causas physicas, multo solidior fuisse, et altius in Naturam penetrâsse, quam illa Aristotelis, et Platonis: Hanc unicam ob causam, quod illi in causis finalibus nunquam operam triverunt; hi autem eas perpetuo inculcârunt. Atque magis in hac parte accusandus Aristotiles quam Plato: quandoquidem fontem causarum finalium, Deum scilicet, omiserit, et naturam pro Deo substituerit, causasque ipsas finales, potius ut logicæ amator quam theologiæ, amplexus sit. Neque hæc eo dicimus, quod causæ illæ finales veræ non sint, et inquisitione admodum dignæ in speculationibus metaphysicæ, sed quia dum in physicarum causarum possessiones excurrunt et irruunt, misere eam provinciam depopulantur et vastant."—*De Augm. Scient.* Lib. III. Cap. 4.

Note (BB.) page 333.

Among the earliest opponents of Descartes's doctrine concerning the *Final Causes*, was Gassendi; a circumstance which I remark with peculiar pleasure, as he has been so unjustly represented by Cudworth and others, as a partisan, not only of the physical, but of the atheistical opinions of the Epicurean school. For this charge I do not see that they had the slightest pretence to urge, but that, in common with Bacon, he justly considered the physical theories of Epicurus and Democritus as more analogous to the experimental inquiries of the moderns, than the logical subtilties of Aristotle and of the schoolmen. The following passage is transcribed in Gassendi's own words, from his Objections to the Meditations of Descartes.

"Quod autem a *physicâ consideratione rejicis usum causarum finalium*, aliâ fortassis occasione potuisses recte facere: at de Deo cùm agitur, verendum profectò, ne præcipuum argumentum rejicias, quo divina sapientia, providentia, potentia, atque adeò existentia, lumine naturæ stabiliri potest. Quippe ut mundum universum, ut cœlum et alias ejus et præcipuas partes prætercam, undenam, aut quomodo meliùs argumentare valeas, quàm ex usu partium in plantis, in animalibus, in hominibus, in te ipso (aut corpore tuo) qui similitudinem Dei geris? Videmus profectò magnos quosque viros ex speculatione anatomicâ corporis humani non assurgere modò ad Dei notitiam, sed hymnum quoque ipsi canere, quòd omnes partes ita conformaverit, collocaveritque ad usus, ut sit omnino propter solertiam atque providentiam incomparabilem commendandus."—Objectiones Quintæ in Meditationem IV. *De Vero et Falso.*

I do not know if it has hitherto been remarked, that Gassendi is one of the first modern writers, by whom the following maxim, so often repeated by later physiologists, was distinctly stated; "*Licet ex conformatione partium corporis humani, conjecturas desumere ad functiones mere naturales.*" It was from a precipitate application of this maxim, that he was led to conclude, that man was originally destined to feed on vegetables alone; a proposition which gave occasion to several memoirs by Dr. Wallis and Dr. Tyson, in the Philosophical Transactions of the Royal Society of London.

Note (CC.) page 344.

The theories of Hume, of Paley, and of Godwin, how differently soever they may have figured in the imaginations of their authors, are all equally liable to the fundamental objections stated in the text. The same objections are applicable to the generous and captivating, but not always unexceptionable morality inculcated in the writings of Dr. Hutcheson.—The system, indeed, of this last philosopher, may be justly regarded as the parent stock on which the speculations of the others have been successively grafted.

Mr. Hume entered on his Inquiries concerning Morals, at a period when Dr. Hutcheson's literary name was unrivalled in Scotland. The abstract principles on which his doctrines are founded, differ widely from those of his predecessor, and are unfolded with far greater ingenuity, precision, and elegance. In various instances, however, he treads very closely in Dr. Hutcheson's footsteps: and in the final result of his reasonings, he coincides with him exactly. According to both writers, a regard to general expediency affords the only universal canon for the regulation of our conduct.

It is a curious circumstance in the History of Ethics, that the same practical rule of life, to which Dr. Hutcheson was so naturally and directly led by his cardinal virtue of disinterested benevolence, has been inferred by Dr. Paley from a theory which resolves moral obligation entirely into prudential calculations of individual advantage. For the very circuitous, and (in my opinion) very illogical argument, whereby he has attempted to connect his conclusion with his premises, I must refer to his work.[*]

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[*] Principles of Moral and Political Philosophy, Book ii. Chap. 1, 2, 3, 4, 5, 6.

The theory of Dr. Paley has been very ably examined by Mr. Gisborne, in a treatise entitled the Principles of Moral Philosophy investigated, and briefly applied to the Constitution of Civil Society. (London, 1790.) The objections to it there stated appear to me quite unanswerable; and they possess the additional merit of being urged with all deference so justly due to Dr. Paley's character and talents.

The *Political Justice* of Mr. Godwin is but a new name for the principle of general expediency or utility "The term *justice*," he observes, "may be assumed as a general appellation for all moral duty.—That this appellation," he continues, "is sufficiently expressive of the subject, will appear, if we consider for a moment, mercy, gratitude, temperance, or any of those duties which, in looser speaking, are contradistinguished from justice. Why should I pardon this criminal, remunerate this favor, abstain from this indulgence? If it partake of the nature of morality, it must be either right or wrong, just or unjust. It must tend to the benefit of the individual, either without entrenching upon, or with actual advantage to the mass of individuals. Either way, it benefits the whole because individuals are parts of the whole. Therefore, to do it is just, and to forbear it is unjust. If justice have any meaning, it is just that I should contribute every thing in my power to the benefit of the whole."—*Polit. Justice*, Vol. I. pp. 80, 81.

It is manifest, that, in the foregoing extract, the duty of *justice* is supposed to coincide exactly as a rule of conduct with the affection of *benevolence*, whereas, according to the common use of words, justice means that particular branch of virtue which leads us to respect the *rights* of others; a branch of virtue remarkably distinguished from all others by this, that the observance of it may be extorted by force; the violation of it exposing the offender to resentment, to indignation, and to punishment. In Mr. Godwin's language, the word *justice* must either be understood to be synonymous with general *benevolence*, or—assuming the existence of such an affection—to express the *moral fitness* of yielding, upon all occasions, to its suggestions. "It is *just*," says Mr. Godwin, "that I should contribute every thing in my power to the benefit of the whole. —My benefactor ought to be esteemed, not because he bestowed a benefit upon me, but because he bestowed it upon a human being. His desert will be in exact proportion to the degree in which the human being was worthy of the distinction conferred. Thus, every view of the subject brings us back to the consideration of my neighbour's moral worth, and his importance to the general weal, *as the only standard* to determine the treatment to which he is entitled. Gratitude, therefore, a principle which has so often been the theme of the moralist and the poet, is no part either of *justice* or virtue." (Ibid. p. 84.) *The* words *just* and *justice* can, in these sentences, mean nothing distinct from morally *fit* or *unreasonable;* so that the import of the doctrine amounts merely to the following proposition, That it is reasonable or right, that the private benevolent affections should, upon all occasions, yield to the more comprehensive;—which is precisely the system of Hutcheson disguised under a different and much more exceptionable phraseology.

This abuse of words is not without its effect in concealing from careless readers the fallaciousness of some of the author's subsequent arguments; for although the idea he professes to convey by the term *justice*, be essentially different from that commonly annexed to it, yet he scruples not to avail himself for his own purpose, of the received maxims which apply to it in its ordinary acceptation. In discussing, for example, the validity of promises, he reasons thus: "I have promised to do something just and right.—This certainly I ought to perform. Why? Not because I promised it, but because *justice* prescribes it. I have promised to bestow a sum of money upon some good and respectable purpose. In the interval between the promise and my fulfilling it, a greater and nobler purpose offers itself, which calls with an imperious voice for my co-operation. Which ought I to prefer? That which best deserves my preference. A promise can make no alteration in the case. I ought to be guided by the intrinsic merit of the objects, and not by any external and foreign consideration. No engagements of mine can change their intrinsic claims. If every shilling of our property, every hour of our time, and every faculty of our mind, have already received their destination from the principles of *immutable justice*, promises have no department left upon which for them to decide. *Justice*, it appears, therefore, ought to be done, whether we have promised it or not."—Ibid. p. 151.

It is quite evident, that, in this passage, the paramount supremacy indisputably belonging to *justice* in its usual and legitimate sense, is ascribed to it when employed as synonymous with *benevolence;* and of consequence, that the tendency of the new system, instead of extending the province of *justice*, properly so called, is to set its authority entirely aside, wherever it interferes with views of utility. In this respect, it exhibits a complete contrast to all the maxims hitherto recognised among moralists. The rules of justice are happily compared by Mr.

Smith to the strict and indispensable rules of grammar; those of benevolence to the more loose and general descriptions of what constitutes the sublime and beautiful in writing that we meet with in the works of critics. According to Mr. Godwin, the reverse of this comparison is agreeable to truth; while, at the same time, by a dexterous change in the meaning of terms, he assumes the appearance of combating for the very cause which he labors to betray.

Of the latitude with which the word *justice* had been previously used by many ethical writers, a copious and choice collection of instances may be found in the learned and philosophical notes subjoined by Dr. Parr to his Spital Sermon. (London, 1801.) "By none of the ancient philosophers, however," as he has well observed, "is justice set in *opposition* to any other social duty; nor did they employ colossal weight of the *term* in crushing the other moral excellencies, which were equally considered as pillars in the temple of virtue."—pp. 28, 29, 30, 31.*

Note (DD.) page 345.

As the main purpose of this section is to combat the logical doctrine which would exclude the investigation of Final Causes from natural philosophy, I have not thought it necessary to take notice of the sceptical objections to the theological inferences commonly deduced from it. The consideration of these properly belongs to some inquiries which I destine for the subject of a separate Essay. On *one* of them alone I shall offer at present a few brief remarks, on account of the peculiar stress laid upon it in Mr. Hume's Posthumous Dialogues.

"When two *species* of objects," says Philo, "have always been observed to be conjoined together, I can *infer*, by custom, the existence of one wherever I *see* the existence of the other: and this I call an argument from experience. But how this argument can have place, where the objects, as in the present case are single, individual, without parallel, or specific resemblance, may be difficult to explain. And will any man tell me, with a serious countenance, that an orderly universe must arise from some thought and art, like the human, because we have experience of it? To ascertain this reasoning, it were requisite that we had experience of the origin of worlds; and it is not sufficient surely, that we have seen ships and cities arise from human art and contrivance.—Can you pretend to show any similarity between the fabric of a house, and the generation of the universe? Have you ever seen Nature in any such situation as resembles the first arrangement of the elements? Have worlds ever been formed under your eye; and have you had leisure to observe the whole progress of the phenomenon, from the first appearance of order to its final consummation? If you have, then cite your experience, and deliver your theory."

This celebreted argument appears to me to be little more than an amplification of that which Xenophon puts into the mouth of Aristodemus, in his conversation with Socrates, concerning the existence of the Deity. "I behold," says he, none of those governors of the world whom you speak of; whereas here, I see artists actually employed in the execution of their respective works."—The reply of Socrates, too, is in substance the same with what has been since retorted on Philo, by some of Mr. Hume's opponents. "Neither, yet, Aristodemus, seest thou thy soul, which, however, most assuredly governs thy body; although it may well seem, by thy manner of talking, that it is *chance* and not *reason* which governs thee."

Whatever additional plausibility Philo may have lent to the argument of Aristodemus, is derived from the authority of that much abused maxim of the inductive logic, that "all our knowledge is entirely derived from experience." It is curious, that Socrates should have touched with such precision on one of the most important exceptions with which this maxim must be received. Our knowledge of our own existence as sentient and intelligent beings, is (as I formerly endeavored to show) not an inference from experience, but a fundamental law of human belief. All that experience can teach me of my internal frame, amounts to a knowledge of the various mental operations whereof I am conscious; but what light does experience throw on the origin of my notions of personality and identity? Is it from having observed a constant conjunction between sensations and sentient beings; thoughts and thinking beings; volitions and active beings; that I infer the existence of that individual and permanent *mind*, to which all the phenomena of my consciousness belong? Our conviction that *other men*, are, like ourselves, possessed of thought and reason; together with all the judgments we pronounce on their intellectual and moral characters, cannot (as is still more evident) be resolved into an experimental perception of the conjunction of different objects or events. They are inferences of design from its sensible effects, exactly analogous to those which, in the instance of the universe, Philo would reject as illusions of the fancy.*

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* Having mentioned the name of this eminent person, I eagerly embrace the opportunity of acknowledging the instruction I have received, not only from his various publications, but from the private literary communications with which he has repeatedly favored me. From one of these (containing animadversions on some passages in my Essay on the Sublime,) I entertain hopes of being permitted to make a few extracts in a future edition of that performance. By his candid and liberal strictures, I have felt myself highly honored; and should be proud to record, in his own words, the corrections he has suggested of certain critical and philological judgments, which, it is highly probable, I may have too lightly hazarded.

But leaving for future consideration these abstract topics, let us, for a moment, end to the scope and amount of Philo's reasoning.—To those who examine it h attention, it must appear obvious, that, if it proves any thing, *it leads to* eral conclusion. That it would be perfectly impossible for the Deity *if he* to exhibit to Man any satisfactory evidence of *design* by the order and . of his works. That every thing we see is *consistent* with the suppo- its being produced by an intelligent author, Philo himself has explicitly edged in these remarkable words: "Supposing there were a God, who . discover himself immediately to our senses; would it be possible for him ve stronger proofs of his existence, than what appear on the whole face of ture? What, indeed, could such a Divine Being do, but copy the present economy of things;—render many of his artifices so plain, that no stupidity could mistake them;—afford glimpses of still greater artifices, which demonstrate his prodigious superiority above our narrow apprehensions;—and conceal altogether a great many from such imperfect creatures?" The sceptical reasonings of Philo, therefore, do not, like those of the ancient Epicureans, hinge, in the least, on alleged disorders and imperfections in the universe, but entirely on the impossibility, in a case to which experience furnishes nothing parallel or analogous, of rendering *intelligence and design* manifest to our faculties by their sensible effects.—In thus shifting his ground from that occupied by his predecessors, Philo seems to me to have abandoned the only post from which it was of *much* importance for his adversaries to dislodge him. The logical subtilties, formerly quoted about experience and belief, (even supposing them to remain unanswered.) are but little calculated to shake the authority of principles, on which we are every moment forced to judge and to act, by the exigencies of life. For this change in the tactics of modern sceptics, we are evidently, in a great measure, if not wholly, indebted to the lustre thrown on the order of nature, by the physical researches of the two last centuries.

Another concession extorted from Philo by the discoveries of modern sciences is still more important. I need not point out its coincidence with some remarks in the first part of this section, on the unconscious deference often paid to final causes by those inquirers who reject them in theory;—a coincidence which had totally escaped my recollection when these remarks were written. I quote it here, chiefly as a pleasing and encouraging confirmation of the memorable prediction with which Newton concludes his Optical Queries; that, "if *Natural Philosophy*, in all its parts, by pursuing the inductive method, shall at *length* be perfected, the bounds of *Moral Philosophy* will be enlarged also."

"A purpose, an intention, a design," says Philo, "strikes every where the most careless, the most stupid thinker; and no man can be so hardened in absurd systems as at all times to reject it. *That Nature does nothing in vain*, is a maxim, established in all the schools, merely from the contemplation of the works of Nature, without any religious purpose; and from a firm conviction of its truth, an anatomist, who had observed a new organ or canal, would never be satisfied till he had also discovered its use and intention. One great foundation of the COPERNICAN system is the maxim, *That Nature acts by the simplest methods, and chooses the most proper means to any end;* and astronomers often, without thinking of it, lay this strong foundation of piety and religion. The same thing is observable in other parts of philosophy: And thus all the sciences lead us almost insensibly to acknowledge a first intelligent author; and their authority is often so much the greater, as they do not directly profess that intention."

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* This last consideration is ably stated by Dr. Reid. (See Essays on the Intellectual Powers, pp. 631, 632, 4to. Ed.) The result of his argument is, that "according to Philo's reasoning we can have no evidence of mind or design in any of our fellow-men."—At a considerably earlier period, Buffier had fallen into the same train of thinking. Among the judgments which he refers to *common sense*, he assigns the first place to the two following: "1. *Il y a d'autres etres, et d'autres hommes que moi au monde.* 2. *Il y a dans eux quelque chose qui s'appelle verite, sagesse prudence,*" &c. &c. (Cours de Sciences, p. 566. Paris, 1732.) I have already objected to the application of the phrase *common sense*, to such judgments as these; but this defect, in point of expression, does not detract from the sagacity of the author in perceiving, that in the conclusions we form concerning the minds and characters of our fellow creatures, (as well as in the inferences drawn *concerning the invisible things of God from the things which are made*,) there is a perception of the understanding implied, for which neither reasoning nor experience is sufficent to account.

*P. 73.

Since this sheet was cast off, I have been informed from the best authority, that the conversation here alluded to, which I had understood to have taken place between Lord Chief Justice Mansfield, and the late Sir Basil Keith, really passed between his Lordship and another very distinguished officer, the late gallant and accomplished Sir Archibald Campbell. I have not, however, thought it worth while, in consequence of a mistake which does not affect the substance of the anecdote, to cancel the leaf;—more especially, as there is at least a possibility that the same advice may have been given on more than one occasion.

APPENDIX.

ARTICLE I. (See page 117.)

THE following article relates entirely to the question,—"How far it is true, that all mathematical evidence is resolvable into identical propositions." The discussion may, in one point of view, be regarded as chiefly verbal; but that it is not, on that account, of so trifling importance as might at first be imagined, appears from the humiliating inference to which it has been supposed to lead concerning the narrow limits of human knowledge. "Put the question," says Diderot "to any candid mathematician, and he will acknowledge, that all mathematical propositions are merely identical; and that the numberless volumes written (for example) on the circle, only repeat over in a hundred thousand forms, that it is a figure in which all the straight lines drawn from the centre to the circumference are equal. *The whole amount of our knowledge, therefore, is next to nothing.*"—That Diderot has, in this very paradoxical conclusion, stated his own real opinion will not be easily believed by those who reflect on his extensive acquaintance with mathematical and physical science; but I have little doubt, that he has expressed the amount of the doctrine in question, agreeably to the interpretation put on it by the great majority of readers.

As the view of this subject which I have taken in the text, has not been thought satisfactory by my friend M. Prévost, I have thought it a duty, both to him and to myself, to annex to the foregoing pages, in his own words, the remarks subjoined to the excellent and faithful translation with which he has honored this part of my work, in the *Bibliothèque Britannique*. Among these remarks, there is scarcely a proposition to which I do not give my complete assent. The only difference between us turns on the propriety of the language in which some of them are expressed; and on this point it is not surprising, if our judgments should be somewhat biassed by the phraseology to which we have been accustomed in our earlier years. The few sentences to which I am inclined to object, I have distinguished from the rest, by printing them in small capitals.—Such explanations of my own argument as appear to be necessary, I have thrown into the form of notes, at the foot of the page.

In the course of M. Prévost's observations on the point in question, he has introduced various original and happy illustrations of the important distinction between *conditional* and *absolute* truths;—a subject on which I have the pleasure to find, that all our views coincide exactly.

"A la fin de l'article que l'on vient de lire,* l'ingénieux auteur renvoie à ce qu'il a dit au commencement. Il pense y avoir suffisamment prouvé que l'évidence particulière qui accompagne le raisonnement mathématique ne peut pas se résoudre dans la perception de l'identité. Recourons donc à cette preuve. Elle se trouve consister toute entière en réfutation.

"I. L'auteur commence par remarquer, que quelques personnes fondent l'opinion qu'il rejette sur celle qui prend les axiomes pour premiers principes. Et comme il a combattu celle-ci, il en conclut que sa conséquence doit être fausse. Un tel argument a en effet beaucoup de force pour ceux qui sont partis d'une certaine théorie sur les axiomes pour en conclure l'assertion contestée; mais il n'en a point pour les autres. Le rédacteur de cet article se range parmi ces derniers. Il a dit et i pense encore, que le mathématicien avance de supposition en supposition; que c'est en retournant sa pensée sous diverses formes, qu'il

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* Chap. II. Sect. 3. Art II. of this volume.

arrive à d'utiles résultats; QUE C'EST LA RECONNOISSANCE DE QUELQUE IDENTITÉ QUI AUTORISE CHACUNE DE SES CONCLUSIONS; et toutefois il a dit et il persiste à croire, que les axiomes mathématiques ne font que tenir la place ou de définitions ou de théorèmes; et que les définitions sont les seuls principes des sciences de la nature de la géométrie. Voici ces propres expressions.* 'J'observe que de bonnes définitions initiales sont les seuls principes rigoureusement suffisans dans les sciences de raisonnement pur .... C'est dans les définitions que sont véritablement contenues les hypothèses dont ces sciences partent......... On pourroit concevoir, [toujours dans ces mêmes sciences,] que les principes fussent si nettement posés, que l'on n'y trouvât autre chose que de bonnes définitions. De ces définitions retournées, résulteroient toutes les propositions subséquentes. LES DIVERSES PROPRIÉTÉS DU CERCLE QUE SONTELLES AUTRE CHOSE, QUE DIVERSES FACES DE LA PROPOSITION QUI DÉFINIT CETTE COURBE?—C'est donc l'imperfection (peut-être inévitable) de nos conceptions, qui a engagé à faire entrer les axiomes pour quelque chose dans *les principes* des sciences de raisonnement pur. Et ils y font un double office. Les uns remplacent des définitions. Les autres remplacent des propositions *susceptibles* d'être démontrées.'

"Il est manifeste que celui qui a tenu de tout temps ce langage n'a pas fondé son opinion, vraie ou fausse, relativement à l'évidence mathématique, sur une opinion fausse relativement aux axiomes; ou du moins, qu'étant si parfaitement d'accord avec Mr. Dugald Stewart en ce qui concerne les premiers principes des mathématiques, ce n'est point de là que dérive l'apparente discordance de ses expressions et de celles de son ami, sur ce qui concerne le principe de l'évidence mathématique dans la déduction démonstrative. Dès lors il est évident que ce premier argument de l'auteur reste pour lui comme nul.

"II. Passons au second. Celui-ci est encore purement négatif et personnel. Il s'addresse à ceux qui dérivent, d'un principe propre à la géométrie, l'assertion que l'auteur combat. De ce que l'égalité en géométrie se démontre par la congruence, ces philosophes se pressent de conclure, que, dans toutes les mathématiques, les verités *reposent sur* l'identité. Ceux donc qui n'ont jamais songé à donner un tel appui à l'assertion contestée ne *peuvent absolument pas se rendre* à l'attaque dirigée contre cet appui. Il est probable qu'un très-grand *nombre* de partisans du principe de l'identité, considéré comme base de la démonstration, se trouvent (comme le rédacteur peut ici le dire de lui-même) tout à fait étrangers à la manière de raisonner que l'auteur réfute; et n'ont point formé leur opinion relativement à l'évidence mathématique d'après la congruence (*rélle* ou *potentielle*) de deux espaces. C'est ce que le rédacteur affirme ici, quant à lui, de la manière la plus positive; et de là résulte que l'argument personnel,† dirigé contre ceux qui ont été menés d'une de ces opinions à l'autre, ne l'atteint point.

"Il est un peu plus difficile de prouver cette affirmation, que quand il étoit question des axiomes, parce que ceux-ci ne peuvent pas manquer de s'offrir aux recherches du logicien, au lieu qu'il n'est pas appellé à prévoir l'application inconsidérée du principe de superposition à toute espèce de démonstration. Si cependant il fait voir que son opinion sur la démonstration dérive de principes universels et tout différens de celui qu'on a en vue, il aura fait, je pense, tout ce qu'il est possible d'attendre de lui.

"Qu'il soit maintenant permis au rédacteur de quitter la tierce *personne*, et pour éviter quelques longueurs et quelques expressions indirectes, d'établir nettement son opinion et la marche qu'il a tenue en l'exposant.

"Dès les premières pages de ma logique, je pars de la distinction à faire entre les deux genres de vérité; la *conditionelle* et l'*absolue*. Puis j'ajoute:

"LE MOYEN UNIQUE, PAR LEQUEL NOUS CONNOISSONS SI UNE PROPOSITION CONDITIONNELLE EST VRAIE, OU LE CARACTERE D'UNE TELLE VÉRITÉ, EST L'IDENTITÉ BIEN ÉTABLIE ENTRE LE PRINCIPE ET LA CONSÉQUENCE. CETTE IDENTITÉ N'EST PAS COMPLETE SANS DOUTE; MAIS ELLE EST TELLE A QUELQUE ÉGARD, QUE LA CONSÉQUENCE DOIT ETRE TOUTE ENTIERE COMPRISE DANS LE PRINCIPE."‡

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* Essais de Philos. Tom. II. p. 29, à Genève, chez Paschoud, 1804.

† Ad hominem.

‡ Essais de Phil. Tom. II. p. 2. "Le lecteur équitable voudra bien se rappeler que l'ouvrage, dont ce passage est tiré, n'est que l'esquisse d'un cours fort étendu, dans lequel se trouvent développés, par des exemples et de toute manière, les simples énoncés du texte. A peine est-il nécessaire de dire ici en explication que j'entends par l'identité complète ou non complète entre le principe et sa

"Traitant ensuite des sciences selon leur genre, j'appelle sciences *de raisonnement pur* celles qui ne s'occupent que de la vérité conditionelle. Je cherche, d'une manière générale et abstraite, les caractères de ces sciences. J'en fais ensuite l'application aux mathématiques dans les deux branches qu'elles comprennent; et c'est par cette voie, que je me trouve avoir déterminé la nature de la démonstration. J'ai soin du reste de faire remarquer que la nature du raisonnement pur, ou proprement dit, ne dépend nullement du sujet, et qu'il n'est propre aux mathématiques qu'en ce sens que ces dernières s'occupent de raisonnement d'une manière exclusive et n'y mêlent point des propositions de vérité absolue, comme font les sciences de *fait et d'expérience*. En voilà assez, je crois, pour faire voir que ce n'est pas témérairement que j'affirme n'avoir eu aucune facon conçu la nature de la démonstration d'après le point de vue borné de la superposition. Je ne puis donc, quant à moi, donner mon assentiment à un argument qui n'attaque que ceux dont l'opinion a cette base.

"III. On est toujours long quand on réfute une réfutation. J'aurois donc tort de m'étendre au-delà de ce qui est strictement nécessaire pour établir nettement l'état de la question. Je ne discuterai pas des opinions qui me sont étrangères, telles que celles de Leibnitz, de l'auteur d'une Dissertation latine imprimée à Berlin en 1764, de Barrow, Condillac, Destutt-Tracy. Il me suffit d'avoir répondu, pour moi et pour ceux qui pensent comme moi, aux deux seuls argumens de l'auteur, contre l'opinion que j'ai dès long-temps adoptée.

"J'ajouterai cependant un mot au sujet d'une remarque, que l'auteur introduit en disant, qu'elle est *applicable à toutes les tentatives que l'on a faites pour établir l'opinion dont il s'agit*. 'Accordant,' dit'il, 'que toutes les propositions mathématiques puissent être représentées par la formule $a=a$, il ne s'en suivroit nullement que chaque pas du raisonnement, qui conduit à ces conclusions, soit une proposition de même nature.' Je prie l'auteur de cette objection de vouloir bien réfléchir un instant sur le sens du mot *pas* ramené à son expression propre et non figurée. Certainement un *pas du raisonnement* n'est autre chose qu'une proposition. Si donc on accorde que toute proposition est représentée par $a=a$, il faudra bien que tout *pas* soit de même nature.*

"Quant à la lettre chiffrée, certainement elle diffère de la nonchiffrée quant aux signes écrits; comme aussi les plus exagérés partisans du principe de l'identité ne nieront pas que l'expression *deux plus deux* ne soit différente de l'expression *quatre*. Dans l'un et l'autre cas le signe diffère, le sens que l'on a en vue est le même.

"IV. Les observations précédentes ont pour but de prouver que, dans les procédés de raisonnement, (procédés que les mathématiques offrent dégagés de tout mélange,) on déduit les conséquences en s'appuyant constamment sur LE PRINCIPE D'IDENTITÉ. Je dois dire un mot maintenant de la raison pour laquelle je crois nécessaire d'établir solidement ce principe et de la mettre au-dessus de tout attaque. Cette raison est, qu'à l'instant où on le perd de vue, on court

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conséquence. Si je conclus, par example, du genre à l'espèce, il y a identité incomplète; comme lorsqu'ayant prouvé une vérité de tout polygone, je l'affirme du triangle en particulier. Il y a identité complète dans une équation. Et on entend bien que l'identité dont il s'agit est celle de la quantité, (du nombre des unités,) et non de toute autre. Ces deux exemples me semblent suffire pour prévenir toute équivoque."

* That the word *pas* or *step* is a figurative expression, when applied to a process of reasoning, cannot be disputed; and the same remark may be extended to the word *proposition*, and to almost every other term employed in discussions connected with the Human Mind. It may be doubted, however, whether it can be correctly asserted, that *a step of reasoning* differs in no respect from a *proposition*. In *our* language, at least, the word *step* properly denotes, not a proposition, but the *transition* to a new proposition from others already known. Thus, when I say, "the area of a triangle, having the circumference of a circle for its base, and the radius for its altitude, is *greater* than the area of any polygon inscribed in the circle," I enunciate a *proposition*. When I say, that "the area of the same triangle is *less* than that of any circumscribed polygon," I enunciate another *proposition*. But when I *infer* from these two propositions, that the areas of the triangle and circle are *equal*, I obtain possession of a new truth distinct from either; nor is it easy to imagine a more significant metaphor for expressing this acquisition, than to say, that I have advanced or gained *a step* in the study of geometry.

risque de confondre deux genres de vérités, que nous savons tous qu'il faut distinguer. Ce qu'il importe de prévenir, c'est le passage inaperçu du relatif à l'absolu; c'est une conclusion vicieuse, déduite régulièrement d'une hypothèse, et témérairement appliquée à ce qui est indépendant de cette hypothèse. Ce sophisme, qui paroît grossier, a néanmoins été commis plus d'une fois et le sera, dans quelques occasions déceptrices, par ceux qui n'auront pas pleinement analysé le travail du raisonnement.

“Tout se réduit, sans doute, en fait de raisonnement, à reconnoître que la conséquence est bien déduite du principe. Mais quel est le caractère auquel on reconnoîtra que cette déduction a été bien faite? C'est ce que ne disent pas ceux qui rejettent le caractère de l'identité. Et j'avoue que je ne conçois pas quel autre on pourroit tenter d'y substituer. CELUI-LA EST SIMPLE ET CLAIR.* On peut, à chaque proposition, s'arrêter pour voir si elle n'est que le développement d'une précédente; et si, par inadvertance on sort du genre, en mêlant des faits aux hypothèses, on est ramené forcément à *celles-ci*.

“Si Jean Bernouilli et Leibnitz avoient reconnu leurs hypothèses aussi nettement qu'Euler les reconnut plus tard, ils n'auroient pas été divisés d'opinion sur la nature des logarithmes des nombres négatifs et imaginaires. Si Huyghens n'avoit vu, dans le travail du mathématicien, que le retournement de ses propres hypothèses, il ne se seroit pas servi peut-être de l'expression que rapporte Leibnitz. Ce dernier lui ayant montré, qu'une quantité mêlée d'imaginaires pouvoit être convertie en quantité réelle, ‘Huyghens,’ dit Leibnitz, ‘trouva cela si admirable, qu'il me répondit qu'il y a là-dedans quelque chose qui nous est incompréhensible.’†

“Je connois un professeur de logique, qui a coutume, dans ses cours, d'embarrasser à dessein ses élèves par des questions relatives aux rapports des quantités négatives et positives. Si un paradoxe les arrête, ils se tiennent pour avertis, qu'il ne peut y avoir dans les conséquences, que ce qui est *implicitement* contenu dans le principe; et ils se donnent le soin de bien affermir celui ci, je veux dire, *de le réduire* à des termes parfaitement clairs; après quoi, il ne leur en coûte point de lever les difficultés. *Mais si l'on* n'est pas bien préoccupé de cette vérité fondamentale, on ne saura à quoi imputer l'anomalie, ou *l'apparente* contradiction, des conséquences.

“Personne n'admire plus sincèrement que je ne fais le génie de Jaq. Bernouilli, qu'il a si heureusement appliqué à la théorie des probabilités; et je ne fais certainement aucune injure à sa mémoire, en le produisant comme un exemple de la facilité avec laquelle le mathématicien, séduit par ses belles découvertes, oublie un instant quel est le genre de vérité qui lui est propre. J'ai en vue la dernière réflection de son *Art de conjecturer*. D'une formule (très-belle sans doute et très-ingénieuse) par laquelle ce profond penseur a apprécié la probabilité d'approcher du rapport des causes en multipliant les effets; tout-à-coup il conclut à la régularité des lois qui gouvernent l'univers.‡

“On ne me reprochera pas d'avoir tiré mes exemples des écrits de quelques raisonneurs médiocres; et l'on voudra bien croire, que si j'avois voulu puiser à de telles sources, j'aurois eu beaucoup de facilité à multiplier mes citations.

“Je pense donc enfin, qu'il faut que celui qui travaille dans les sciences de raisonnement pur soit bien averti, qu'il ne fait autre *chose que retourner ses hypothèses*, et que c'est là le seul moyen de prévenir des erreurs assez dangereuses. L'opinion que je soutiens n'est donc point simplement une affaire de spéculation, dont il me seroit aisé de faire le sacrifice; c'est une règle pratique qui doit servir de base à la partie de la logique qui s'occupe de cette espèce de vérité.

“V. Je dirai maintenant pourquoi, ATTACHÉ, COMME JE LE SUIS, AU PRINCIPE DE L'IDENTITÉ, je crois néanmoins pouvoir espérer de ne différer qu'en apparence de l'excellent philosophe qui rejette ce principe. C'est parce que nous pensons l'un et l'autre que les définitions sont les vrais principes des mathématiques, et que tout le reste en dérive. C'est là sans doute l'objet principal. Et je m'assure, que quand ce philosophe viendra à discuter (avec plus de détail que son sujet ne l'appelloit à le faire) le vrai caractère de la bonne déduction, il finira par admettre, sinon les mêmes expressions, du moins au fond le même principe que j'emploie.

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* Would it not be still simpler and clearer to caution mathematicians against ever losing sight of the distinction between absolute and hypothetical truths?

† Leibnitz, Opera, Tom III. p. 372. Lettre à Varignon.

‡ “Unde tandem hoc singulare sequi videtur, quod si eventuum omnium observationes per totam æternitatem continuarentur, (probabilitate ultimo in perfectam certitudinem abeunte,) omnia in mundo certis rationibus et constant vicissitudinis lege contingere deprehenderentur; adeo ut, etiam in maxime casualibus atque fortuitis, quandam quasi necessitatem, et, ut sic dicam, fatalitatem agnoscere teneamur; quam nescio annon Plato intendere voluerit, suo de universali rerum apocatastasi dogmate,” etc. *Art. conj.* p. 4, fine.

"Je vois en effet, et par son ouvrage et par sa correspondance, que ce sont les expressions sur-tout qu'il censure; et quant à ce point là, je serai très-disposé à y apporter les changemens qu'il voudra bien lui-même me suggérer, pourvu toutefois qu'elles rendent correctement ma pensée.

"Ainsi après lui avoir exposé, dans une lettre, mes idées au sujet du principe d'identité, j'ajoutois: 'Tout cela revient à dire, que la conséquences est contenue toute entière dans le principe. Ne pourroit-on pas donner à toutes les propositions mathématiques cette tournure : *Dire telle chose, c'est dire telle autre chose?*' Mr. Dugald Stewart me répond là-dessus: 'Je suis parfaitement d'accord avec vous, quant à l'esprit et à la substance de votre remarque. Celui qui admet la définition ou l'*hypothèse* ne peut pas nier ses diverses conséquences logiques, pourvu qu'il soit en état de comprendre chaque pas de la marche par laquelle le principe et les conséquences sont liés ensemble. Je ne suis pas sûr toutefois que, pour le gros des lecteurs, vous ne présentiez pas cette proposition d'une manière trop concise et trop figurée, quand vous dites que la conséquence est *contenue* dans le principe, ou qu'affirmer l'une c'est affirmer l'autre. Tout au moins je pense qu'il y a lieu de craindre que ces expressions ne suggèrent de fausses idées à ceux qui ne prendront pas garde au sens précis que vous donnez aux mots que vous employez.' Je suis donc tout prêt à remplacer le mot *contenue* par un équivalent. Mais ce mot me semble pris ici dans un sens familier aux logiciens; car c'est précisément ainsi que l'on dit communément que l'espèce est comprise dans le genre.*

"Un autre mot, que relève Mr. Dugald Stewart, est celui de proposition *identique*.† Il me fait remarquer, que plusieurs bons logiciens ont appellé de ce nom les propositions qui ne font que répéter le même mot aux deux termes, (A est A,) et qu'ils désignent ces propositions comme inutiles et nugatoires. Je renoncerai sans discussion, sur l'autorité de ces logiciens, à l'expression que j'ai adoptée, quoique je puisse opposer autorité à autorité. Mais je désire conserver un mot qui exprime, de manière ou d'autre, ma pensée. Comme dit Campbell,‡ cette phrase 'quatre est quatre,' n'offre qu'une proposition inutile et véritablement nugatoire. Mais dire 'deux fois deux font quatre,' c'est présenter la même idée sous deux faces; et un tel travail est, comme on sait, fort utile. Je m'étois accoutumé à appeuer *tautologiques* les premières, et *identiques* les secondes. Je suis tout prêt à changer cette habitude, pourvu que l'on me fournisse un mot à substituer.*

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* "Si l'on peut dire que la notion de triangle est comprise dans celle de polygone, on pourra dire de certaines propositions sur les triangles qu'elles sont comprises dans leurs analogues sur les polygones. Si donc on a prouvé, par exemple, que dans tout polygone, les angles extérieurs sont égaux à quatre droits, on pourra de ce principe tirer la conséquence pour les triangles. Et cette conséquence semble pouvoir être dite *contenue* dans son principe."

With this remark I perfectly agree; for he who knows the general theorem, is in actual possession of all its particular cases; insomuch that, after this theorem has been once brought to light, no other person can afterwards lay claim to any one of the cases as an original discovery. After it had been demonstrated, for instance, that in *every* rectilineal figure, the exterior angles are equal to four right angles, no geometer could well think of announcing, as a new proposition, that the same theorem holds with respect to every *triangle*. The particular cases, therefore, may all be said, with perfect propriety, to be *contained* in the general theorem. But how widely does this differ from the meaning annexed to the same word, when it is said, that all the properties of the circle, whether discovered or *undiscovered*, are *contained* in Euclid's definition of that curve!

† "Mr. Dugald Stewart reproche aussi quelque part au mot d'*identité* d'être emprunté des scolastiques, mais ce n'est point là une tache à mon avis; car (comme disoit Leibnitz en parodiant un mot de Virgile) il y a de l'or dans ce fumier. De plus en Anglais on pourroit peut-être se passer de ce mot, en Français on ne le peut pas. Nous parlons une langue timide, qui s'effraie du moindre néologisme."

‡ Voyez Bibl. Brit. p 32 de ce volume.—Littérat. Vol. LVIII. No. 3, Mars 1815.

"Enfin Mr. Dugald Stewart joint à ces critiques une remarque, qui fait voir qu'un des motifs, pour lesquels il s'est élevé contre le principe d'identité, est la crainte qu'il n'entraine dans quelques conséquences fausses ou même dangereuses. Voici comme il s'exprime sur la fin de la lettre, dont je viens d'extraire les observations précédentes : 'A toutes ces propositions, *comme vous les entendez*, je souscris sans difficulté. Mais n'est-il pas à craindre qu'elles ne fassent naitre dans l'esprit de quelques lecteurs des idées différentes de celles que vous y attachez? Et n'ont-elles pas une tendance à donner un air paradoxal à une doctrine, qui, lors-qu'elle est proposée d'une manière un peu pleine, ne donne aucune prise au doute ou à l'hésitation? Quelle étrange conséquence a été tirée de l'usage de ce mot *identité*, par un philosophe, tel que Diderot! *Interrogez*, dit-il, *des mathématiciens de bonne foi, et ils vous avoueront que leurs propositions sont toutes identiques; et que tant de volumes sur le cercle, par exemple, se réduisent à nous répéter en cent mille façons différentes, que c'est une figure, où toutes les lignes tirées du centre à la circonférence sont égales.* Nous NE SAVONS DONC PRESQUE RIEN.'†

"Cette dernière conclusion, à laquelle arrive Diderot, est d'autant plus étrange, comme le dit celui qui la cite, qui c'est précisément parce que les mathématiques travaillent sur la verité conditionnelle, qu'elles sont douées d'une pleine certitude, ainsi que j'ai tâché de la faire voir ailleurs,‡ et que c'est par conséquent à ce titre qu'elles méritent éminemment le nom de *science*. Mais de ce qu'un philosophe, tel que Diderot, s'est égaré dans une conséquence à laquelle sans doute il aspiroit, je ne crois pas que l'on doive conclure à la nécessité de changer un langage philosophique et conforme á la vérité. Si ce langage a une apparence de paradoxe, ce que je ne sens pas, il faut tâcher de la réformer, à quoi je suis bien disposé à coopérer.

"Dans tout le volume que j'extrais, il n'est plus question de la discussion qui vient de nous occuper. Je ne crois pas en conséquence avoir occasion d'y revenir. Ce n'est pas même sans regret, et sans une sorte de *répugnance*, que je l'ai entreprise. Je ne la terminerai pas sans rapeller encore une fois que l'espèce d'opposition qui règne entre nos opinions est moins réelle qu'apparente, et que Mr. Dugald Stewart a jugé lui-même que c'étoit sur les mots que nous différions, plutôt que sur le fond des choses."

ARTICLE II. (See page 232.)

For the contents of this Article, as well as of the former, I am indebted to M.

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[*] The distinction marked in the above passage, between *tautological* and *identical* propositions is precise and important; but the meaning annexed to the latter epithet does not appear to me agreeable to established use; according to which, *identical propositions* are exactly of that description to which the name of *tautological* is here applied. I have looked into every book of logic within my reach, and find their language on this subject perfectly uniform. Locke defines identical propositions to be those in which a term *is affirmed of itself; and* he gives as instances, "a soul is a soul," "a spirit is a spirit," "a law is a law," "right is right," and "wrong is wrong."—The definition of identical propositions given by Crousaz coincides exactly with that of Locke: "Quando subjecti et attributi sedem idem occupat terminus, eodem sensu prorsus veniens; propositio talis dicitur identica; et nugatoria est."—Condillac, one of the highest authorities, certainly, among French logicians, expresses himself in the same manner. "Tout le système des connoissances humaines peut être rendu par une expression plus abrégée et tout-à-fait identique: *les sensations sont des sensations.* Si nous pouvions, *dans toutes les sciences*, suivre également la génération des idées, et saisir le vrai système des choses, nous verrions d'une vérité naître toutes les autres, et nous trouverions l'expression abrégée de tout ce que nous saurions, dans cette *proposition identique;* LE MEME EST LE MEME." Does not the last of these propositions, as well as the first, fall under the class of tautological or nugatory propositions? and, if this be the case, will it not follow, that the assertion which gave rise to this discussion requires some modification?—"C'est en répétant sans cesse, *le même est le même*, que le géomètre opère tous ses prodiges."

[†] Lettre sur les Aveugles.

[‡] Des Signes, p. 15 et 25 et suiv.—Essais de Philos. Tom. II. p. 12 et 18.

Prévost. They are extracted from a letter, dated Geneva, 9th April 1815.—My readers will thus be put in possession of the opinion of my learned friend on the only two questions of any moment which we have had occasion to discuss in the course of our long literary correspondence. The difference between us in both instances, I perfectly agree with him in thinking, is more apparent than real.

——" Mais il y a une autre question sur laquelle nous différons, ou du moins nous ne nous exprimons pas de même. C'est ce qu'établit d'une manière positive, et dans des expressions bien honorables pour moi, la note qui se trouve au bas de la page 311[*] de ce même 2d volume de vos *Elém. of the Phil.* &c.—Ce qu'il y a de singulier, c'est qu'encore ici, j'ai lieu de croire que notre dissentiment est moins réel qu'apparent, et que la controverse sur ce point n'est pas moins verbale que sur l'autre, peut-être plus, ou du moins plus évidemment telle. La chose vaut la peine d'être éclaircie.—Et d'abord, vu la distance qui nous sépare, oserois-je vous prier de relire ici ce que je dis à la page viii et ix de ma préface à la traduction de votre premier volume. Vous y verrez que je n'établis, aucune différence entre nous relativement à la nature des causes physiques.[†] En citant à la p. 311[‡] du 2d vol. les deux phrases auxquelles vous réduisez mes opinions à ce sujet, il vous a échappé que la première de ces phrases étoit modifiée par celle qui la suit et que vous avez omise. Cette modification est tout-à-fait essentielle. 'Si l'on analyse le mot *force* ou *énergie*, et qu'on se borne aux causes naturelles ; on verra que celà signifie que l'effet suit constamment la cause par quelque loi de la nature." Dans mes cours d'enseignement, j'insiste beaucoup sur cette définition, à laquelle je ne crois pas que (dans vos idées telles que je les connois) vous ayez rien à objecter. Elle présente en effet le même caractère des causes physiques que Hume et vous; et elle répond en même temps à une difficulté de Reid, tres-fondée si on n'y met aucune limite. Est-il besoin avec vous de détails et d'exemples ? Je ne le pense pas. Cependant la crainte d'être obscur me fera ajouter un mot. A la nouvelle lune de Mars, les Mahométans se tiennent prêts à voir, et dès qu'ils l'aperçoivent ils jettent un cri. Ce cri est bien un signe, mais non une cause de l'apparition que j'aurai devant les yeux en les tournant vers le ciel. Il précède, mais ce n'est pas en vertu d'une loi. Réciproquement, un corps électrique étant frotté un autre corps s'en approche, je dis indifferemment que l'un de ces corps attire l'autre, ou que l'électricité est cause de ce mouvement. C'est que ces faits se suivent en vertu des lois de l'électricité. Et il est entendu que l'on remonte, tant que l'on peut, de cause en cause. Ainsi l'on pourroit demander la cause de l'électricité ; comme on pourroit demander celle de la fièvre. qui elle-même est cause du délire, &c. &c. Je dis donc que nous sommes pleinement d'accord sur la nature des causes physiques, à moins (ce que je ne prévois pas) que vous ne me contestiez la distinction que j'établis entre cause et signe.—Le point sur lequel nous ne sommes pas d'accord (et où j'ai contre moi, outre vous, plusieurs nobles autorités) est une question de physique pure ; savoir : la cause de la gravitation est-elle au nombre de celles dont on doit s'occuper? Persistons à cet égard chacun dans notre opinion. Il est probable que ce champ de discussion ne nous engagera pas dans une controverse directe, et je m'en féliciterai.—Je passe à remarquer la différence entre *loi* et *cause*. Une loi est un rapport, ou mieux, un rapport de rapports, une proportion. C'est une chose théorique; c'est une généralisation; une loi ne peut agir. Il faut donc un agent; une cause, pour réaliser un changement. Exemple. 'Si le pole nord d'un aimant est approché du pole sud d'un autre aimant, il y a attraction.' C'est une loi. Mais ce simple énoncé ne *produit* rien. Maintenant j'ai sur ma table deux aimans, j'oppose leurs poles antagonistes; la cause y est; l'attraction (ou approche) suivra d'après la loi.—J'ai risqué de proposer que la mot *agent* fût plus particulièrement consacré aux causes impulsives, parce-qu'elles sont celles qui produisent des phénomènes très communs, très-bien discutés, et universels. Je n'ai proposé cela qu'avec une expression de doute; et je n'ai rien à dire à ceux qui s'y refusent.—Pour mieux montrer que la distinction de *loi* et *cause* est nécessaire en physique, j'userai d'un exemple. Un homme, venu de je ne sais où, voit un cheval qui traîne un chariot; mais *il* n'aperçoit point les traits. A chaque pas que fait le cheval, il voit le chariot avancer.* Il en conclut que le cheval est cause du mouvement du chariot. Il pénètre plus avant et trouve les traits; il reconnoît que ce mouvement se rapporte à l'impulsion. Tout cela suppose qu'il connoît les lois de celle-ci. Le cheval est une cause, le trait est une cause plus reculée. C'est celle-ci que j'appellerois un agent. Mais pour cette dernière dénomination je ne dois pas trop y retenir.—Quant à la fiction de Boscovich, purement hypothétique; j'avoue que je ne vois pas qu'elle soit d'un grand poids en faveur de ceux qui inculpent la recherche de la cause de la gravitation. J'aurois sur ce sujet plus à dire; mais comme c'est purement un point de physique, il me semble que je puis ici m'en abstenir."

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[*] Page 222 of this edition.

[†] The passage here referred to by M. Prévost is as follows:

"Je n'entend pas toutefois souscrire implicitement à toutes les opinions de l'auteur. Je me suis prescrit dans cette traduction de rendre fidèlement ses pensées, et je n'ai pas cru devoir toujours lui opposer les miennes, dans les cas rares ou je ne me trouvoit pas d'accord avec lui. J'en donnerai un seul exemple. L'auteur envisage comme contraire aux principes d'une saine philosophie la recherche de la cause ou du mécanisme de la gravitation. Ceux qui ont connoissance des travaux entrepris et exécutés par G. L. Le Sage sur cette matière, savent qu'une telle recherche est compatible avec la méthode philosophique la plus rigoureuse. Je suis pleinement d'accord avec M. Stewart, quant à la règle générale à laquelle cette maxime particulière se rapporte. Il y a une limite, que le philosophe doit reconnoître, et au-delà de laquelle il ne doit pas pousser ses recherches. Mais je diffère sur la place où cette limite doit être posée ; en convenant toutefois, que la recherche du mécanisme de la gravitation a été l'occasion d'une multitude d'erreurs, et que c'est un véritable écueil qui doit êtr soigneusement évité par ceux qui débutent dans la carrière des sciences philos phiques. Quoique cette question soit très intéressante en physique, elle l' moins en métaphysique, ou plutôt en logique ; puisque dans cette dernière scie ce n'est qu'un exemple d'une règle qui a beaucoup d'applications. raison, je m'abstiendrai d'entrer ici dans la discussion de ce point conte

[‡] Page 222 of this edition.

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* "Il est entendu que ce fait se répète souvent d'une manière uniforme sur plusieurs chariots pareils et itérativement sur chacun."

END OF VOL. II.

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